ADVANCED MANAGEMENT

Quarterly Journal

The Society for the Advancement of Management

PAPERS

from the

Annual Conference

January-March, 1941 Vol. VI, No. 1

ADVANCED MANAGEMENT

Quarterly Journal

Published by THE SOCIETY FOR THE ADVANCEMENT OF MANAGEMENT, INC.

29 West Thirty-Ninth Street, New York, N. Y.

VOLUME VI JANUARY-MARCH, 1941 NUMBER 1

CONTENTS

ADVANCED MANAGEMENT is the successor to The Society for the Advancement of Management Journal; the Bulletin of the Taylor Society and of The Society of Industrial Engineers. Published quarterly. Per year to Members $3.00, to others, $6.00. This issue $1.50. It is included in the indexing of the Industrial Arts Index which is obtainable at Public Libraries.

Re-entered as second-class matter, December 13, 1939, at the Post Office at New York, N. Y., under the Act of March 3, 1879.

T

issu

was

tifi

ger

tai

oth

tial

the

twe

fro

the

age

day

exe

ing

and

thi

age

tive

ous

are

and

the

ord

ati

wel

tho

and

usu

tro

COMMENT

THIS issue contains a major proportion of the available proceedings of the December, 1940, Annual Conference. Two papers appeared in the last issue and the rest will be covered in the next.

That gathering was wisely geared to defense. And it was emphasized throughout that the principles of scientific management do not change in a period of emergency production—even though it may be true that certain principles are emphasized more than others and others have to be temporarily subordinated. The essential approach remains valid and enormously helpful.

Current problems were re-examined in the light of the developments of principle and practice over the past twenty-five years; and useful analogies were drawn from our experiences in the last war. A reading of these papers should prove an aid to all thoughtful managers who are faced with the problem of meeting today's unusual demands upon physical equipment and executive skill. At the same time, these reflections arising out of today's experience point to the newer social and public aspects which are more to the fore in the thinking of all than was true in 1917.

Defense production is intensive production. Management's eyes become fixed on a crucial goal. Executives invariably tend to get preoccupied and even nervously taut in the efforts to achieve the goal. They also are likely to assume that everyone—including the rank and file in their own employ—is as anxious to prosecute the War as they are. Finally war orders are special orders and they require departures from normal operating practice which are both disturbing and critical.

The consequence of these special circumstances may well create a temporary easing off by executives of thoughtful concern about shop frictions, minor grievances, stresses of supervision and inspection due to unusual manufacturing specifications.

It is a commonplace of labor relations that major troubles come from an accumulation of irritating personal complaints (often minor and easily cared for) as often as they do from major conflicts of principle or policy.

Happy is that management which can be sure day by day that it has in operation in every department of its plant a "grievance machinery" which promptly and fully gets the workers' peeves off their chests, and as promptly corrects conditions which are amiss. Defense production peculiarly requires of management that it keep its upward channels of worker communication open beyond all doubt. No provisions of collective bargaining as such or of themselves can assure this condition.

Departmental worker representatives are necessary as the funnels or "transmission belts" up to management. But beyond the formal measures and procedures it is essential for some high management officer to be able to assure his executive colleagues that this machinery is functioning smoothly and effectively.

Do the employes trust their representatives? Are there cliques within departments which nullify such representation? Do representatives trust their foremen and deal with them promptly? Do foremen act rapidly on complaints they can correct? When adjustments have to go higher, are there delays or early consideration?

Every company which believes it has communication well established ought nevertheless to ask itself the above questions two or three times a year.

Lubrication is essential to machine operation. And it is essential to human dealing. Lubrication of human relations can be positive in varying degrees. But at the least the men should be allowed and encouraged to get all their grousings, grouches, rumors and suspicions uttered in front of someone in the management. And this someone should be an executive of sufficient status and personal diplomacy to use these facts in wise ways.

ORDWAY TEAD.

SPRING CONFERENCE

THE Annual Spring Conference of The Society for the Advancement of Management will be held at the Wardman Park Hotel in Washington, D. C., on May 22 and 23, directly following the three-day meeting at the same hotel of the Eastern Regional Conference of the Civil Service Assembly, combined with the Institute of the Society for Personnel Administration.

Recognizing that one supreme challenge at the moment in the development of an adequate defense program is that of *Harmonizing Public and Private Management of Production for National Defense,* the Committee headed by Dr. Harlow S. Person has chosen this topic as the central theme of the Spring Conference.

The two-day program will be specifically directed toward a better understanding of the problems involved in using effectively for defense production the human resources of the nation and in co-ordinating production capacities for defense activities.

The *Effective Use of Human Resources* will be the topic for the first day's sessions, with major emphasis on *Morale as a Factor in Defense Production.*

The conference will open with *An Analysis of the Basis for Morale,* to be followed by consideration of *Current Developments Bearing on Morale,* with their effect on production for defense presented by an employer and by a labor leader.

This major theme of *Morale as a Factor in Defense* will be continued at the afternoon session that day. Considered first will be the necessity for the *Discovery and Utilization of Capacities and Skills* of workers engaged in defense production. This will be followed by discussions of the means to be developed for *Meeting the Menace of Insecurity During the Post-Emergency Readjustment.*

Ample time for discussion, not only by discussion leaders but by participating members, will be arranged after each of the major speeches of the day.

During the second day of the conference, the general theme of *Co-ordinating Production for National Defense* will be developed.

In the morning session discussion will center around two major aspects of the problem of co-ordination. *The Present Organization for Defense* will be outlined and *An Appraisal of Present Control of Use of Production Facilities* presented.

A luncheon meeting will be arranged for the second day of the conference at which the various aspects of *Decentralization of the National Defense Program* will be discussed. This theme will be continued at the afternoon session, with reports on actual *Experience in Decentralization* presented, together with consideration of *Current Problems in Defense Production* vital at the moment.

An evening dinner meeting will be held on Thursday, May 22, at which a speaker of national prominence will discuss the pertinent question, *Can We Produce Effectively for Defense Without Sacrificing Democracy?*

Another dinner meeting, which members of The Society for the Advancement of Management who can arrange to attend the sessions of the Eastern Regional Conference of the Civil Service Assembly will find of special interest, is one planned for May 21 at which a nationally known speaker will discuss problems of *Departmental Administration and Civil Service Personnel.*

It is of interest to members of SAM to note that, while the registration fee for each of these two-day conferences is $1.00, a joint registration fee of $1.50 has been arranged for those who wish to attend both the SAM Spring Conference Meeting on May 22 and 23 and the Conference of the Civil Service Assembly on May 19, 20, and 21.

The complete program of the spring conference together with the speakers under each major topic will be announced in the April and May issues of the News Letter of the Society.

Labor and Scientific Management

Chairman's Introductory Remarks

By SAM A. LEWISOHN
Member of the Firm, Adolph Lewisohn & Sons, New York

I FEEL that it is appropriate at the start to assert, perhaps overconfidently, that there is no insuperable conflict between the desires of the worker and the aspirations of those wishing to perfect management's methods. Indeed the genius of America has been just this reconciliation between aspirations which include a common goal. As an employer it is proper for me to suggest that as the initiative in introducing scientific methods has been the employer's, so the initiative in securing labor's co-operation should be the employer's. And I would like also to suggest that this reconciliation between labor and scientific management is part of a broader reconciliation which is taking place in the world today between the claims of Power on the one hand and of Humanity on the other. In the first place we must encourage the able—the powerful in skills and ability—to exercise their abilities to help and not to destroy mankind. And in the second place we must convince the individual man on the street that these activities of the able are being exercised in such a manner as to benefit everybody. Here in this field of the use of scientific methods in industry we are endeavoring to reconcile the demands of professional power to increase production and the more immediate aspirations of the individual worker for a better life. The former of course helps to bring about the latter, but the worker must be convinced that this is the case. The initiative in securing that conviction is the responsibility of management and labor's co-operation in these matters; largely it depends on management's salesmanship, leadership and understanding of the human element involved.

I am tempted to use an analogy in a professional field that also involves close contact between professional power and the individual human being. It is the field of medicine to which I allude. No matter how technically competent a doctor may be he has the responsibility of securing the co-operation of his patient. If he falls down in obtaining the patient's confidence he has muffed his job. On the other side the patient must be the one who gives the surgeon a chance to work out his technical problem—who is willing to put up with some discomfort, and who does not expect the surgeon to perform miracles or achieve perfection at every turn.

Everyone has had experience with two types of doctors—one with a sweet bedside manner but little professional competency—the other skilled and able but forbidding in his approach to the patient. Particularly in surgery we have observed the latter type. For a surgeon is mainly interested in scientific manipulation and in many cases is apt to ignore the element of personal sympathy with the patient. I don't know how many of you have heard of Dr. Wilmer who was for many years before his death, head of the eye department of Johns Hopkins (known as the "Wilmer Eye Institute"). Dr. Wilmer was extraordinarily skillful in a manual way—extraordinarily penetrating in his diagnoses, but his unprecedented national reputation was not based solely on his technical knowledge and skill but on his ability to obtain the complete confidence of his patients. To an extraordinary extent eye operations require the co-operation of the patient. It was Wilmer's ability to secure that co-operation that helped him to achieve miraculous results. The department was created to enable him to teach others to use the same combination of technical skill and human understanding.

Here it seems we have a lesson for those who are endeavoring to apply scientific management in factory operations. In both cases both professional skill and human tact are involved. Scientific management includes obtaining labor's co-operation. Otherwise it is not a *factory process* but a *laboratory dream.*

Admitting this responsibility for initiative on the part of management it would be unreal to expect any solution of the problem which depends on management's doing a perfect job. At best, scientific management is administered by human beings, with their diversity of ability. Just as a manager does not expect perfect performance from a worker, labor must not expect perfect

performance from a manager. If we are to get anything out of our discussion it must be by reference to broad-scale co-operativeness on both sides, without reference to inadequacies here and there. On what terms will management be able to obtain this from labor? On what conditions will labor accept management's initiative in the science of industry?

I am confident that we will hear constructive answers to these questions. For the constructive spirit—the spirit of give and take—is the genius of America.

What Management Wants from Labor

By L. CLAYTON HILL

Vice-President in Charge of Manufacturing, The Murray Corporation of America, Detroit

OBVIOUSLY, no individual can speak for all management. On the other hand, while many of these observations are personal ones, the expectations presented here probably represent the thinking of a majority of men in advanced management. Before presenting management's expectations of the worker, it would seem advisable to examine some of the characteristics which advanced management must be willing to maintain to justify its holding these expectations.

It is assumed that the members of this advanced management group are honorable, truthful, open-minded and fair-dealing citizens. That they are intelligent, aggressive and progressive. That they understand and apply the techniques of modern industrial engineering, accountancy, sales promotion, research and like activities of scientific management. This advanced management is socially mindful of all its responsibilities to the worker, his family and the community in which the enterprise functions. It is sympathetic with the principle of collective bargaining and believes in the employe's right to choose his representative to co-operate with management. The members of this advanced management do not consider only themselves smart and all workers ignorant. They keep the workers informed on important management action affecting them. They differentiate between man and machine when determining labor policies, setting work standards and providing working conditions. They pay wages as high as competitive markets permit. While believing in co-operation with the working force, this management has the courage to back up its convictions and support its policies with firmness when the need arises.

Such management is indeed ideal. Maybe it exists today, but it would be difficult to find. I do believe, however, that there are managements honestly striving to attain this ideal. Contact with many progressive management representatives convinces me that their number is increasing. Such advanced managements only are justified in holding all these expectations.

Foremost of the expectations such a management may hold of its workers is a high degree of confidence, respect and loyalty. Every industrial or commercial enterprise is dependent for its success upon efficient labor and able management, working together harmoniously. They should not be two opposing factions, each struggling to get all the traffic will bear from the company's operations. One is hopelessly lost without the other. Only if the working force respects and admires the leadership which is endeavoring to carry them forward, can there be co-operative action and prosperity in a business. Management realizes fully all the implications of the interdependence of employer and employe. We also recognize the importance of able leadership in the labor unions. Management, therefore, expects the worker to recognize the value of able industrial management to him. We are human and therefore fallible—but we are trying. Prejudices formed in the past, many times with good reason, should now be buried and forgotten.

Advanced management expects the worker to interest himself more in at least those simple economic fundamentals which underlie and control the functioning of American free enterprise. We do not expect him to become an economist; few of us can qualify as such ourselves. However, we would like the workers to realize that work and its productive results are the real wealth of the land. If we all attempt to get more and do less, it is bound to lead us to a lower standard of living. There is too little understanding of what makes the wheels of industry keep turning, too much scorn of the profit motive, too much minimizing of competitive pressure, too much opposition to improved methods and work simplification. Workers must gain an increasing

understanding of the fact that our real employers are the consuming public. If they as workers do not produce a good article, at a low cost when the public wants it, their personal fortunes will suffer. Management knows that the successful enterprise should be striving always to give more for less to the consumer. If the worker fully accepted this simple premise, he would co-operate willingly with management in all efforts to attain that objective.

It would seem an admirable job for The Society for the Advancement of Management to undertake a program of informing the worker along these lines, working co-operatively with the top management of our unions to provide the needed factual data. We hope the workers will accept such informative efforts as constructive, not derisively dismiss them as capitalistic propaganda.

The Company's Welfare

An industrial enterprise to be successful must be more than a group of individuals each intent upon securing all he can for himself. The enterprise itself must succeed if everyone in it is to enjoy a continuing prosperity and security. The objective of any good management should be to build, operate and maintain the business first and let personal rewards come as a result of the company's success. Too frequently a worker does not take this view. His objective seems to be to secure all he can for himself first, often even with no regard for his fellow workmen, and let the company shift for itself.

Industry needs more workers who sincerely appreciate that the success of the enterprise is paramount to their own success. The company's problems are their problems. The company's failures, losses and disappointments are inseparably part and parcel of the workers' lives. Seniority has wedded them to the company, in many cases for a life term. If the company fails, the workers are cast adrift to start all over again in another enterprise.

The enterprise too must eat, put savings in the bank for a rainy day, pay taxes, keep up with the Joneses, maintain its home, buy new and improved home furnishings, maintain friendly relations with its employers —the customer. All the headaches and worries of the working individual are present in greatly magnified form in the running of the company the employe serves. When he appreciates this fact and maintains the consciousness that his success and the company's are inseparable, then and only then will he begin to work for the company not just on the company.

Management expects the worker to give Taylor's "fair day's work for a fair day's pay." This is a time-worn phrase, more elastic than a rubber band. Every honorable workman knows, in his own conscience, what an honest day's work implies. To management it means simply—keeping oneself occupied in the expenditure of normal energy without stopping for anything except personal needs or a nominal amount of rest to prevent undue fatigue.

It is stupid to believe that any honest worker does not know when he is working and when he is loafing. Even the dishonest and lazy worker is equally conscious of his effort to "kill time." Management expects labor collectively to oppose loafing practices as energetically as it opposes unreasonable "speed up" practices of short-sighted individuals in management. Management knows that the vast majority of American workmen are at heart industrious, desire to improve their skill and are anxious to do a good job. We expect the good worker to be allowed to continue his conscientious efforts without interference and intimidation from the laggard.

Management expects the worker not only to turn out a fair quantity of work but also to take genuine pride in doing an acceptable or better quality of work. Each worker is the best qualified inspector of his own product. He should need little or no checking to maintain a high standard of workmanship. In recent years there has been a deplorable tendency in some sectors of American labor to accept lightly the responsibility of producing fine quality merchandise without policing. Fortunately that sector is small. Management hopes it will diminish, not multiply.

Increasingly Progressive Management Needed

To all of these expectations and some which follow, the worker may say: "All right, I appreciate all that. I'll give you a good day's work, I'll accept your new methods, I'll agree to your time standards and all the rest. But if I do, will management give me my cut? Will you lower the product price to give my labor a wider market? Or will you raise your own pay and split bigger melons with Wall Street?"

Those questions *must* be answered, and to the worker's satisfaction, gentlemen. Not by words, but by *convincing management action.* These idealistic expectations of the worker can only be held in direct proportion

to our own efforts to attain progressive management ideals.

Management expects the worker and his representative to gain a better understanding of the term collective bargaining. Too frequently we encounter the worker who considers the bargaining table a place where he demands and the management gives "or else." He wrongly interprets the word "collective" to mean that he collects and the word "bargaining" to mean that the result of his collecting is a bargain.

Management conceives collective bargaining as a process which provides a common meeting ground where either management or labor may bring a request, a suggestion, a problem or a grievance for dispassionate discussion. Demands and threats by either party have no place in this discussion. Upon the bargaining table are laid all the facts as well as all the opinions bearing upon the problem being discussed. After reasonably thorough deliberation, a proposal is made by one side or the other or both. A decision acceptable to both sides finally evolves. This may be full acceptance of the original request, or some compromise intelligently and co-operatively accomplished. This is true collective bargaining as advanced management is endeavoring to practice it.

Management expects the worker to avoid the use of belligerent pressure of any kind until—and always until —the normal bargaining procedure has completely failed to produce the desired end. Much too prevalent is the practice of approaching the management with a problem on the "demand and threat" basis. No intelligent or courageous person likes to be bullied. It is an approach which fosters ill will, suspicion and submerged resentment. The argument generally used in its defense is that "we won our recognition that way." Having won the recognition the hard way, does it necessarily mean perpetuating a technique of threats and coercion? Advanced management, avoiding such techniques itself, hopes not.

All of us have had occasion to say after a meeting of the minds on some perplexing problem of labor relations: "These union boys are not so bad, after all. They displayed a good deal of sense and fairness. I believe they are all right."

Yet management, while in this mood of fairness and utmost willingness to continue a friendly relationship in all good faith, is too often brought up short by a slap in the face from the same union group, or one of its close associates. For example, we read now and then items in the labor press which describe one or another of the current labor disputes. Almost invariably these items are couched in the most truculent, insolent terms imaginable. When, we wonder, will labor see that it does not have to be eternally militant and abusive, after it has reached an understanding with management?

Management Aware of Worker's Power

Every intelligent management is conscious of the organized power of the working force. It suggests, however, that this power can be employed in a deliberative rather than an explosive manner and produce better results over the long run. It takes time to make a reasonable analysis of any problem. Snap judgment is a dangerous process. Shot gun concessions like shot gun weddings usually end unhappily. Management expects the worker to use the explosive "do this by noon, or else" technique only when all reasonable methods and regular procedures have failed to secure an equitable settlement of any difference. So long as advanced management shows a willingness to "play ball," there is no need for the worker to wave a big stick.

A majority of all labor contracts are written in clear intelligible English. Presumably, they represent agreement between management and worker and should be adhered to honorably by both parties. Obviously, advanced management must keep in word and spirit all agreements written and implied. We expect the worker to do likewise. Contract violations by individuals and out-of-hand groups have been far too frequent. Wildcats have no place in industry. Some unions are making admirable progress in correcting this unhealthy practice. It is encouraging to see those responsible for violation properly disciplined without management instigation. Where management may be compelled to take disciplinary action itself, it solicits full support within the terms of the contract from the workers' representatives.

These expectations relating to breach of contract are pertinent in the main to the thinking of a minority of the stewards and workmen in the rank and file. They are the workers whom labor leaders and management must influence to reason in less selfish terms and along more constructive lines.

Management expects the worker to drive from his ranks the type of representative known generally as the racketeer. Management can deal co-operatively with those labor leaders of high moral character whose interest in the welfare of labor is unselfish and sincere. For-

tunately these are much in the majority. Management hopes they will eventually be in complete command.

The vast majority of American workmen are patriotically devoted to the perpetuation of American freedom and democracy. Management has the same patriotic objective. We hope and expect that this vast majority of loyal American workers will resist and reject the subversive activity of any and all persons who wish to destroy our American way of life. Under none of the foreign ideologies can an ambitious individual create and build an enterprise of his own imagination. No other form of government offers the individual workman such opportunity, such liberty, such freedom of action, such a high standard of life. Working together harmoniously, with characteristic American energy and ingenuity, American workmen and American management can out-perform any dictatorial or collectivist government ever conceived. We are now tackling that job and we must not fail.

There will be those who believe the holding of these expectations by advanced management too idealistic. It is only fair to admit that workers and managers who would meet all the expectations outlined herein might be expected to sprout wings. None of us is perfect, or ever will be, and we of management would be the first to admit that we have plenty of oversights and mistakes to atone for.

But, management is trying, gentlemen, and that is a point I wish to make in closing. We are doing our level best to forget past quarrels, to wipe the slate clean and to establish a sound, sensible system of mutual relationships. We intend to keep on trying. It is just horse sense that we should. There is still much work to be done by management itself and by our more able labor leaders, but understanding between the worker and management is improving. The future of co-operative industrial relationship looks brighter with each passing day. We can be increasingly confident that the worker and his representatives will ultimately achieve with management most of the ends which tonight seem so ideal.

What Labor Wants from Management

By CLINTON S. GOLDEN

Regional Director, Steel Workers Organizing Committee, Pittsburgh

I APPRECIATE very much having another opportunity, under the auspices of The Society for the Advancement of Management, to assist in the task of bringing about a clearer understanding between organized labor and management.

Many labor union officials do not take the time to address such meetings because they feel the results are not worth the sacrifices of time and energy. I do not share this view because my faith in people encompasses the conviction that they are all amenable to reason, although unfortunately in varying degrees; and I believe that any time spent in meetings between management and representatives of organized labor will therefore be well spent. It is my belief that labor-employer relations can be improved through this educative process.

In discussing "What Labor Wants From Management," I am afforded an opportunity to sum up what I have been trying to say at various management gatherings which I have addressed during the last several years.

It would seem that the best way to present the material this evening would be in the form of a broad outline which might serve as a general guide for persons concerned with industrial relations problems. Such a procedure would seem to be more appropriate than discussing specific, individual or minor demands of labor, because the latter vary with individual plants and change from day to day with altered circumstances.

The demands of organized labor which I wish to place before you are:

1. Labor wants management to discard its pretentions of infallibility.
2. Labor wants management to grant it the opportunity to participate fully in the productive processes.
3. Labor wants management to recognize it as an equal in the productive processes.
4. Labor wants management to assume its share of social responsibilities.
5. Labor wants management to stop blaming its failures on labor, government or anybody else.
6. Labor wants management to get on with the job of national defense by getting on with labor.

7. Labor wants management to accept bona fide labor unions and genuine collective bargaining procedures completely and in good faith.

One by one, I shall try to discuss these points.

If my remarks seem caustic because of their frankness, as well they may, I shall not be apologetic. I am speaking frankly in an honest endeavor to fulfil my obligations as a speaker and as a representative of organized labor. A speaker who tells an audience what it may wish to hear instead of what perhaps it should hear is in default of his obligations.

1. Management's Infallibility

There has been a myth about management's infallibility for some time, but it is being punctured. The myth ran something like this: management is hired to manage; therefore, it knows all and sees all; nobody of lower rank can tell management how to do its job, or anybody else's job, better. The fountain head of all technical knowledge and wisdom is the "head office" where management hangs out. This myth was supported since the early twenties by the fifty thousand, sixty thousand, and in some cases, million dollar salaries paid annually to management. Certainly, the myth ran, any man paid such a salary must be worth it. Since our society has been prone to measure merit by the monetary price commanded, management was given social standing commensurate with the salary. These salaries and the accompanying adulation gave management immunity against criticism.

Then came the nineteen thirties, and certain things happened as a result of which management was seen for what it was. The upshot of it all has been, among other things, that this fanciful myth died. And there is no economic, social or political justification for any attempts at its resurrection.

Management, in a collective sense, can be likened to an automobile driver for purposes of illustration. Most of us own and operate automobiles. Years ago when we operated Model T's, we repaired the tires, ground the valves, etc. Today all we do is operate the car. The tires are repaired by garage attendants who do nothing else and who have become proficient in fixing tires. The motor is repaired by an experienced mechanic. We depend upon a multitude of specialists to make it possible for us to operate our automobiles.

This is equally true of industrial management. It depends upon a multitude of trained workers and supervisors to operate industry. Just because management is in the driver's seat, it does not necessarily know all and see all. Each worker in a plant knows his job, has become proficient at it, or is replaced by somebody who has. Instead of being the fountain head of all technical knowledge and wisdom, management is dependent upon each person in the productive process for specialized work and information. The co-ordination of this specialized work and information and their application for productive purposes would seem to be the principal function and purpose of management. Management's position would seem to be one chiefly concerned with co-ordination rather than the constant enunciation of certain prerogatives and the proclamation of its omnipotence. Management must recognize this fact because others have. As an automobile operator, do you reject a suggestion on how to run your car more efficiently simply because it comes from a mechanic? When a mechanic tells you the clutch will last longer if you take your foot off the clutch pedal when the car is in gear, for example, do you accept it graciously? Or do you reply: "If you knew more about operating this car than I do, you would not be a mechanic, but would be operating it instead of me?" Of course not.

2. Labor Wants to Participate Fully in the Productive Processes

Management must discard its myth or illusion and give to labor mental as well as physical participation in the productive processes. Workers want this fuller participation and are entitled to it. The worker in the plant can give his employer as many intelligent suggestions as does the garage mechanic to the car owner. Why say to workers who come forth with constructive ideas for improving plant operations: "If you knew more about running this plant than I do, the stockholders would fire me and hire you to do the job." Yet that is the state of affairs in too large a segment of American industry today. Suggestions on improving efficiency, cutting costs, eliminating wastes, coming from workers, and particularly through their unions, are resented and discouraged. If any of these suggestions are adopted, it is done at the expense of labor. Thus the entire brain power of the working force in American industry is virtually untapped. Workers want to come forth with their ideas, to participate as something much more than recipients and executors of instructions in the productive process. Labor, particularly organized labor, desires an opportunity to show what it can do, to be admitted into the councils of in-

dustry. Only management can open the door of opportunity for workers to participate fully in the productive processes.

Now there has been much discussion to the effect that organized labor is opposed to more efficient production, that there exists an irreconcilable conflict between the aims of scientific management and labor unionism. Such was Professor Hoxie's assertion in 1917. However, that was truer then than it is today. At that time, organized labor was struggling for existence. There was no prevailing recognition then of the natural right of wage earners to organize for mutual aid and protection. Today, almost a quarter of a century later, the status of organized labor is wholly different. The natural right of association and organization is recognized in, and safeguarded by, the law of our country. And with that change of wage-earners' status has come a change in the concepts and implications of productive efficiency. With but limited participation in the productive process by organized labor in 1917 as compared with 1940, wage earners and many other people then felt that it was directed solely toward increasing private profit at the expense of public welfare. Today, with broader recognition and greater participation in the operation of our productive enterprises, organized labor is being given reason to visualize the efficient operation of industry as having to do with its own well being and that of society in general.

Thus members of the Steel Workers Organizing Committee have been seeking this opportunity of greater participation in more than six hundred firms. A few companies have granted it. Each one of these union-management co-operative efforts has been a succes. The per hour output of a small steel mill has been increased from ten to fifteen tons per hour, or 50 percent. The daily production of a household appliance concern has been increased 27.5 percent from fifty-one to sixty-five units per day. The productive efficiency of a submarine motor shop has been raised more than 50 percent. A substantial steel firm has been saved from bankruptcy. And there are other examples.

In each case, the workers were brought into the closest possible participation in production. The challenge is laid before the whole of industrial management. Labor wants this opportunity to participate more in the job of production. The myth that management knows practically everything and that what it does not know it alone can ascertain, is without foundation in fact. This is no time for management to flaunt its so-called inherent prerogatives in labor's face. The time has come in the course of America's national existence when management has to think less of defending its sacred prerogatives, and more of fulfilling its responsibilities to the nation, the workers and the stockholders. Any delay in management's becoming realistic will be at the peril of our essential National Defense efforts. Labor wants the opportunity to participate in the production job; and the country needs it. The next move is up to management to provide the opportunity.

3. Labor Wants to be Recognized as an Equal

Underlying its aspirations for full participation in the job of production, is labor's basic position of equality. This is more than equality at the bargaining table. It is an intellectual equality. This contemplates abandoning the illusion, all too prevalent in industrial circles, that the human beings on management's side are possessed of greater intellectual faculties than are those among the working force. The idea that workers are intellectually inferior to management is the source of many of our difficulties. Years ago we used to believe that a woman was intellectually inferior to a man. Today we have admitted that we were wrong. The intellectual equality of management and labor is a prerequisite to the development of industrial relations along constructive lines.

In this connection, I want to relate an illustrative incident. It concerns Joe Scanlon, a member of our staff. Until recently he worked as a charging machine operator in the open hearth department of a steel firm. In the operation of an open hearth furnace, a heat will sometimes develop a boil on the breast which may break through the front of the furnace; and the molten metal pours out on the floor. This is expensive and dangerous. Every effort is made to prevent it.

The open hearth superintendent at Joe's plant was a graduate of an outstanding university, trained in metallurgy. He applied all his knowledge to the problem, but it was beyond him. For weeks Joe Scanlon had tried to tell him how to stop the metal from gushing out on the floor. The superintendent, a close personal friend of Joe's, would not listen. One shift a boil developed, while the superintendent was out, and threatened to break out through the breast of the furnace. Deciding to put to practical use what he had learned from an old hand in another open hearth department, Joe went

ahead with the necessary preventative measures. He loaded a four-thousand pound box of ore on his charging machine and drew it up before the door of the furnace. Just then the superintendent arrived on the scene. He ordered Joe away, told him he was a "damned fool" and would get burned when the steel poured out, as nothing could be done to stop it. The first melter in charge of the furnace favored trying Joe's plan. The superintendent said nothing doing. Finally, as the boil was almost at a head, the melter ordered the superintendent off the floor, which he could do in his capacity as foreman in charge. The superintendent could fire him later, he said, but he was in charge at the moment; and come what may, Joe was going to get a chance to see what he could do.

The superintendent bitterly went back to his office. Joe returned with the box of ore. The second the metal broke through the breast, Joe dropped the ore over the breast and speedily withdrew his machine. A helper turned the hose from the water-cooled door on the breast freezing it so that the metal was stopped. The boil was broken, the heat continued and was tapped without the loss of a minute's working time or an ounce of steel.

For a month the superintendent would not talk to Joe. Joe had humiliated him. They are good friends again today. The superintendent is working for another company. Frequently he and Joe get together, but they never mention the incident.

The trouble was not with the superintendent, but with his elders and teachers. Somewhere along the line the superintendent had acquired the idea that he was intellectually superior to those who had neither a college education or a position on management's side. The people responsible for putting this idea in the superintendent's head did him a gross injustice.

This case clearly illustrates what I mean by establishing equality between management and labor. Specifically, I believe that if management, instead of generously awarding to labor the possession of all the brawn while appropriating to itself the possession of all the brains, would come around to the point of conceding that labor possessed something besides strong backs, it would then be possible, by joint endeavor, for management and labor to reach a pinnacle of productive achievement never previously attained.

4. Management Should Assume its Share of Social Responsibilities

Technological changes have been introduced recklessly. Management has given no thought to their social consequences. No regard has been shown by management for the human elements involved. Scattered throughout the steel industry are more than fifty thousand displaced handmill workers. Prosperous steel towns have been turned into ghost communities. In a large steel town a mill with three thousand employes on the payroll closed abruptly on October first of 1940. The people were cast adrift, except for a few weeks of unemployment compensation benefits. Even these benefits would never have been provided by law if management had its way. This social irresponsibility must cease. Appearing before the Temporary National Economic Committee, Chairman Philip Murray, President of the CIO, urged:

> Industry must assume social responsibility for technological changes, by seeing that they are introduced under conditions that stimulate instead of retard employment, to see that workers are not displaced, to see that towns are not reduced to ruin, to see that there is no immediate social cost in terms of displaced workers, impoverished families, devastated communities, and bankrupt regions.

There are other fields of activity in which management must assume its proper share of social responsibility. I shall mention but a few. One is in the field of regularizing employment. The annual earnings of our industrial workers are appallingly low even in normal times. In three cases of union-management cooperation, the Steel Workers Organizing Committee, by bringing the workers into full participation in production, reduced the amount of seasonal unemployment from twelve to five weeks on an average.

Management has social responsibilities in local community problems. Clairton, Pennsylvania, has a deplorable housing shortage. A new mill was built nearby, employing some four thousand workers. Families live in shacks, trailers, all overcrowded. The city council and the Mayor attempted to bring a low-cost public housing project into town, but it failed of passage in council because two of its members, management officials in a steel plant, voted it down. The proposition that management should oppose whatever labor espouses is a specious doctrine. It is no less specious when it operates the other way around. Inherent in our industrial communities are many social responsibilities that management and labor must jointly share. Management should cease evading its responsibilities in the field of community welfare.

5. Stop Blaming Failures on Labor, Government

If management admits when it is wrong, it will get a full share of credit when right. The attitude of infinite wisdom and infallibility must be discarded. Labor, in the light of its own harsh experiences, cannot be sold the proposition that management is infallible.

A few weeks ago a steel plant under contract with the Steel Workers Organizing Committee was closed for a few days. It was engaged in national defense work. Management, self-anointed as innocent, rushed to the public press because this "irresponsible" union had closed down the plant. The truth of the matter, and I submit the queston to any fair-minded board of investigation, was that management had been repeatedly warned of what was coming. It had been provoking a strike for months. We had prevented one previously and only with great effort. This plant presented an outstanding example of irresponsible management, of gross mismanagement. Grievances and complaints were not adjusted. A multitude of irritations were injected into the situation by the sheer stupidity and arrogance of management. The workers were driven to the breaking point, and compelled to stop work in order to bring the management to its senses. Our local union was not wholly blameless, to be sure, but the incident would never have occurred if management were not fundamentally at fault.

Yet editorial writers, in their Olympian ignorance of labor problems, charged the union with impeding national defense. If ever there were a case of bad management's impeding national defense, this was one. In spite of the true state of affairs, however, the management attempted to hide its failures by blaming this interruption of national defense production on labor. Such practices are detrimental to American democracy in these and any other times.

I return, for purposes of illustration, to the automobile example. As the operators of our cars, we can do with them as we please, except that we are compelled to learn the speed laws and obey them, master the parking regulations and abide by them, submit to a driver's examination, and be guided by other regulations. All this public regulation, this governmental interference with our prerogatives as automobile drivers do not impair our operating efficiency and skills. They improve them. I hate to think of how low our efficiency would drop if we were to drive an auto where there were no speed laws, traffic cops, or stop-and-go signals.

So, too, with management. Today there are workmen's compensation laws, the Walsh-Healey Act, the Wage-and-Hour Act, the National Labor Relations Act, Social Security Act, and other pieces of social and labor legislation. Some irresponsible elements among management have come forth with the suggestions that these "governmental interferences" with business impair productive efficiency, and that these "interferences" should be set aside or eliminated. Well this isn't true. Basically these measures contribute to greater productive efficiency. Labor does not want management, when and if it falls down on the production of armaments for our national defense, to use labor as a scapegoat and blame it for the failure of industry to produce adequate armaments.

In the last World War, when none of these now existing "governmental interferences" with business were present, industrial management failed to produce armaments in needed quantities or on time. Hours of work were as long as seventy-two per week in 1917-18, for example, in the steel industry, yet Pershing had to get most of his armaments from the Allies.

With equal recklessness, certain management people advocate abolition of the forty-hour week in American industry on the fallacious grounds that France fell because of the forty-hour week there. We know why France fell, and the least of the reasons was the forty-hour week. France fell for the same reasons that Britain was so threatened last May, and still is in great peril. Industrial management failed properly to coordinate the productive machinery in these countries. The managers of industry tackled the job of national defense with more regard for their profit statements than for the national welfare. If anybody doubts this, I suggest he read the *London Economist* for the past six months. The facts are presented there for all to study. Labor does not want management to repeat that fatal error in America. It will do no one any good, least of all management, to blame labor for the failure of our national defense program, when mangement is at fault in the first instance. Management must cease blaming other people for its errors and look at itself more critically so that the fatal errors of other nations will not be repeated in our country.

6. Get on with the Job of National Defense by Getting on with Labor

This, in turn, requires the fulfilment of the final basic desire of labor; namely,

7. Labor Wants Management to Accept Bona Fide Labor Unions and Genuine Collective Bargaining Procedures Completely and in Good Faith

There is a certain amount of hypocrisy in our industrial relations picture. Many management officials recognize collective bargaining as a permanent and desirable way of life in industry. This recognition is honest and sincere. But all management people now enjoying relations with bona fide unions do not share this honest conviction. I have a feeling that in too may instances they look upon unions and collective bargaining as an unavoidable evil, to be recognized for the time being until the opportune moment arrives, as they firmly believe it will, to destroy bona fide unions and end collective bargaining. From this attitude stem most of our industrial relations difficulties at present. Management guards every last inch of ground, begrudges every new inch of ground to labor unions, and seeks to keep unions as weak as possible. The motive can only be that when the opportune time arrives, it will be easier to destroy a weak union than a strong one. I firmly believe this attitude of management's towards collective bargaining relationships to be the cause of most of our industrial disputes, of the state of belligerency existing between management and labor in notable industries, and of the development of fighting, aggressive local union leaders and plant management officials.

Labor want management to accept labor unions as permanent institutions. The reasons are threefold. First, so that labor can settle down to the development of the executive and administrative type of leadership. Secondly, so that the tug-of-war stage of collective bargaining where there is no give-and-take, but mere taking advantage of each other's weaknesses, can be passed. Thirdly, so that constructive relations between management and labor can be built up for the increasing of productive efficiency, out of which flow greater benefits for all people dependent upon the productive process for a livelihood.

The full, complete, and sincere acceptance of bona fide unions and genuine collective bargaining practices comprehends the recognition of unions as exclusive bargaining agents, after required lawful certification, with membership in the union then made a condition of continued employment. The half-way form of recognition prevailing in most of industry today cannot go on indefinitely. It is hypocritical for management to take on the job of protecting the "rights of individual workers." In Pittsburgh we have a strike going into its third month. The principal issue is the union shop. For years the management opposed unions and denied all its employes their right to join a union. Now a majority belong, have been so certified by the Labor Board after a secret election, and they seek full and complete recognition. The management is opposing this on the ground that it would be violating the "individual rights" of its employes if it told them they would be required to join a union. A fifty-year record of disregard for the rights of all its employes is now followed by great concern for the rights of a small minority—only after the great majority joined a union of their own choosing. This is hypocrisy to say the least. The purpose of opposing the union shop, in this instance, was revealed by one of the top officials to a common friend. He said to this friend: "I'm not going to let a really strong union in my plant. If I do, then I'm likely never to be able to get rid of it." In the meanwhile, production, in this case not affecting national defense, is stopped.

The issue of full and complete union recognition is the biggest one confronting industrial relations people today. It will have to be resolved favorably before much more progress can be made. In all frankness, I say management is opposing its own best interests, impairing our national defense efforts, and thwarting the natural growth of labor organizations by resisting the essential democratic principles of free association and of majority rule, which are the crux of the union shop issue. In fact, management is destroying faith in the democratic process when it protects an individual who refuses to join a union and share its administrative costs and responsibilities, but who is always only too eager to take all the benefits the union throws his way. It would be better if management were to become frank on this issue and admit its opposition to a strong union, and cease trying to sell the proposition that opposition to the union shop is predicated on any real concern for the rights of workers or their welfare. Management's record in the past eight decades shows, in the main, little concern for the democratic and civil rights of American wage earners.

Constructive industrial relations can be built only on the solid foundation of strong unions and well-organized management. The trend is toward strong and responsible unions. It cannot be stopped. Times are too critical to delay the trend by impractical and injudicious resistance to a full and complete form of union

(Please turn to page 22)

National Problems of Accelerated Production

National Organization for Industrial Preparedness

By HAROLD J. TOBIN
Professor of Political Science, Dartmouth College

THE aim of America's industrial preparedness for war has been to prepare for a great expansion of munitions production, while maintaining a supply of goods for civilian consumption at a level where national health, morale, and economic stability suffer minimum impairment.

The broad outlines of the industrial preparedness program are still to be found in the Army and Navy Munitions Board's Industrial Mobilization Plan of 1939. The Plan is the product of officers of the two defense services, advised and aided by prominent civilians. It has been revised continually in an attempt to keep it adjusted to Congressional legislation and to constantly changing military plans. The Plan was not to be enacted into legislative form as it stood, but was to be always available as a pattern for civilian mobilization, subject to change as the war situation should require it. The chief reasons for such changes as have been made since its last publication are first, that the Plan was a pattern for war (and the country is not yet at war), and second, that the speed and amount of production required are much greater than projected.

The economic principles on which the Plan was based at the outbreak of the present war were essentially laissez faire with modifications, rather than complete control by the government, or widespread government operation. The profit motive was specifically retained as a means to increase production. Total profits were to be reduced by taxation after they were made, but to balance this reduction the government was to reduce industrial risk by assuming a large part itself. Industry was to be guaranteed adequate capital at reasonable interest, a steady supply of raw materials was to be assured, and adequate power and transportation facilities were to be furnished by the government itself if private sources were insufficient. Government control or operation of any industry was to be extended only so fast and far as private operation broke down. Commandeering of a plant or service would be resorted to only for the purpose of maintaining production which had fallen off due to non-cooperating or inefficient management or labor forces.

Should the profit system alone fail to produce the quantity of goods required however, the Plan provided for filling the gap by use of the priority power, which would direct the flow of supplies, transportation, and even labor, away from non-essential into defense industries. If it became necessary to cut civilian consumption of necessary supplies, the priority power could also be used to do that. Profit therefore was not to be the sole gauge determining what was to be produced, and production for use might largely replace production for profit as a standard as war demands grew.

The organization for controlling the war effort was to be civilian throughout, and kept quite separate from the normal government agencies. The leaders in private industry were to be summoned to direct private industry's efforts for the government. It was assumed that they would come if left free from control by regular government departments, and that they would leave as soon as the emergency was over, thus avoiding permanent increases in the staff of these departments.

The planners realized that unforeseeable dislocations of normal life incident to war would inevitably require a general spirit of enthusiasm and self-sacrifice to meet them, and to secure this the national morale would have to be raised to and kept at a high point. A Public Relations Administration was therefore to arouse enthusiasm by a tremendous publicity campaign, and dissident voices were to be curbed. It was expected that the pressure of an enthusiastic majority would be the most effective weapon in holding the dissidents in line.

But the Plan was vague in several important particulars, notably in the fields of labor and finance. Labor was to be kept contented by keeping a check on living costs and removing grievances. Adequate labor supply for defense factories was not to be provided by letting plants bid for workers, since this method makes labor

restless and increases production costs. Cost increases should be avoided, since they raise prices, which partially cancel the effect of the wage increases to labor and create more serious difficulties for salaried workers. Since the success of wartime controls calls for the enthusiastic acceptance of burdens by the entire population, such upsetting factors had to be avoided. By the same principle, the planners shrank from any attempt to tie workers to their jobs, or to fix wages; moreover, if it were done the same principle would have had to be applied to industrial management.

Neither did the Plan provide means for financing the war, but left that problem to the Treasury. But if the Treasury provided for payment of war costs by heavy taxation, private incomes would be reduced, and wage rises might be forced in consequence. If heavy borrowing by the government were used instead, inflation of prices might result. Tax, price and wage policies hung together, and the Plan remained somewhat vague on them all.

Until 1939 no mention was made by the planners of any postwar readjustments, this being also considered outside the scope of an Industrial Mobilization Plan for war. The 1939 Plan however recognized the interdependence of mobilization and demobilization by providing that the President should consider the creation or maintenance of an agency to deal with demobilization problems, but gave no indication of the nature of its work.

The first eight months of the war brought no serious modification of the Plan, indicating merely that the President was not anxious to establish an emergency organization with great power until there was greater need for it. But the conquest of France made clear the need, and at the same time weakened some of the assumptions on which the Plan was based. The determination to aid England with munitions while enormously increasing our own supplies changed the entire production program. Estimates of munitions needs were based on smaller forces and less equipment than were found necessary. Only enough plant capacity had been lined up to care for the smaller program. The Army planners had figured only on expanding national production according to a loosely fixed time schedule. It was now evident that the most complete utilization of all our facilities, existing and to be created, could not meet our emergency needs.

There was no adequate survey of production resources, and unknown idle plant capacity existed practically everywhere in small units. There was the same lack of knowledge concerning the national resources of technical skills to assure the most effective use of production facilities. Only piecemeal information existed even concerning skilled labor. What was now needed was the immediate utilization of the maximum national man and machine power.

The government immediately expanded the personnel and the authority of the emergency organization, and proceeded to apply priorities to direct production. Conscription, which the defense departments had never hoped to see until war was declared, was instituted by Act of Congress. The wheels commenced to move faster.

But the more rapid the modification of the normal pattern of the nation's life, the more serious the problem of reestablishing the pattern on a peacetime basis. It is still too soon to know what the postwar pattern will be, but no amount of attention to a study of it is too great. A defense effort is not completed with the preparation or successful use of the fighting forces. Only after the war aims have been gained, and after the nation has accommodated itself successfully to the changes which the war has brought, can it be said that it is won.

National Defense and Social Economic Policy

By LEWIS L. LORWIN

I

IN THESE tense times the questions which concern us most are those which deal with the best and quickest use of our energies and capacities for national defense. We have set ourselves a clear goal—a nation powerful enough to meet the threat of any combination of aggressors and strong enough to have a voice in shaping a democratic world in which we can live a free and full life. Only that which carries us forward to that goal is important. Only what we can

do to quicken our forces for reaching that aim is of immediate interest.

But even in this tense situation, the immediate questions of organization and practice make it necessary to give thought to larger economic and social issues and to the fundamentals by which our policies may be guided. Consider, for instance, some of the issues raised by what is called "economic mobilization." Who is to pay the cost of defense and in what measure? What is the best way of paying for it from a national point of view? To what extent shall the Government rely on taxation, on borrowing or on currency expansion? What policy shall be followed with regard to prices, wages or consumption? How shall an adequate labor supply for the defense industries be trained and allocated? To what extent shall the Government combine administrative control with freedom of private enterprise? What place shall different groups of the population—business men, labor, farmers, technicians, etc.—have on Government boards set up to supervise and direct the mechanism of national defense?

These questions cannot be answered entirely on technical grounds. There are always many ways of meeting a problem and the choice cannot be made without reference to general economic and social policies.

Consider also the technical and human problems of management. In the present national emergency American management will surely apply the most progressive principles and techniques which have been developed in the past two decades in order that our fullest possible capacity may be quickly reached in defense operations. But can management attain these aims unless it is fully cognizant of the economic and social bearings of its procedures? If our policies, for instance, should affect prices, profits, rents and wages in such a way as to allocate the burden of war unequally among different groups of the people, management may be confronted in the factory with a state of mind which will not be conducive to production and efficiency and which is caused by conditions which are outside the factory. In other words, the social-economic aspects of relations in production become accentuated, and scientific management must become social-scientific management if it is not only to rise to its problems as they come into the foreground but to anticipate them at the point of origin.

It is thus important for practical reasons, as well as in the interests of our democratic processes of thought and action, that we have as clear a view as possible of the fundamentals by which our defense policies are guided and of the reasons for the sweeping measures which may involve individual sacrifices. The problem which is raised here particularly is that of the relation of national defense policy to general social-economic trends. After all, the problem of national defense has not arisen in a historic vacuum. It is itself a development of social-economic changes which have been accumulating for some time. The questions are—what is the importance of those changes, how do they affect our problems of national defense, and what in turn are the possible effects of national defense on these social trends?

II

From a world point of view, the outstanding fact of the last decade is the rise of the Fascist economic state in a number of countries, but primarily in Germany. The Nazi system may be described as a state controlled economy based on conditional and restricted private ownership of resources, and politically directed toward militaristic aims of conquest and domination. The pronounced militaristic feature of Fascist economy is only partly realized in the United States. It has found its expression not only in the actual gearing of the German economic system to rearmament since 1935, but also in the development of a system of economics intended as a "rationale" for Nazi policy. A host of German writers whose names are hardly known in this country have for a number of years been building up what they call a "theory of militaristic economics." Many of these writers are army men some of whom have played an important part in the development of the Goering Second Four-Year Plan. Others are professors who are expounding their doctrines in universities. The main thesis of these writers is that war is a normal state of society, that "military economics" is a legitimate branch of "economic science" and that it is the function of "militaristic economics" to help the Nazi State carry out its political and economic plans for national expansion by war and conquest.

Many factors may be cited in explanation of this development. One, for instance, relates to the technical changes in the advanced industrial countries of the world. It is these technical changes which have made possible higher productivity and higher standards of living, but which were thwarted by political and international conditions. Another factor is the shift in population, in popular sentiment, and in social attitudes which created a struggle between the several nations of Europe for leadership in developing the world's natural

and economic resources. A third is the failure of the older leadership within each of the several European countries to meet the needs of the mass of the people for some security and a minimum of economic decency.

But whatever the causes, the fact remains that they have given birth to a political-economic system which threatens the safety and social advancement of the world. The doctrines of the "master race," of "blut und boden," of "lebensraum" and "grossraum," all point in the same direction—toward the exploitation of the rest of the world for the benefit of the German people and of its ruling party.

The Germans have realized the need of integrating the dispersed elements of European economic society. This is the sound item in their program for a "new European order" which may, and does, appeal to many people in the United States with a strong instinct for strict housekeeping and management. But the political, racial, and militaristic twist which the Germans have given to this idea destroys its social-economic value. As a result, we have in the Nazi program of a European economic coalition the rebirth of predatory imperialism which under a new name embodies the oldest historic threats to a free and progressive mankind.

While the Nazi State was coming into power, a world-wide movement of an entirely opposite character was also taking place. In England, Sweden, Belgium, France, Australia, New Zealand, in the United States—in fact, along the world-wide democratic front—an effort was being made to work out a new social-economic basis for peaceful and democratic growth. During the first years of the '30's, most western democratic countries went through a stage of economic despondency and social frustration on the part of large masses of the people. Unemployment, insecurity, lack of individual and social direction, the glaring paradox of poverty amidst plenty shook peoples' faith in things as they were. But before the middle of the decade, this negative attitude gave way to positive action, and a world-wide attempt was made to find a way out of the situation by means of new policies which would bring hope and a new sense of security.

The "new policies" differed somewhat from country to country, but in broad outline they were similar. In essence, they consisted of a series of measures designed to stimulate and supplement private enterprise by using the credit and spending powers of government, and to give the people a larger share in the national welfare and a greater degree of economic security by using the powers of taxation. In Sweden, this so-called new "anti-depression policy" was carried out between 1933-35 with more logic, consistency and courage than in any other country. The Swedish Government went about this business in a systematic way, inviting its best economic and social experts to work out carefully a basis for monetary and wage policy, for the reform of the budget, for housing and social policies, and then acted consistently on their recommendations.

The result of this movement was that during the latter half of the '30's, a sort of neo-capitalism was emerging in the western democratic countries. The essence of this neo-capitalism consists in providing private enterprise with a social purpose and in establishing minimum social standards on the basis of which private enterprise is to be conducted. It is a movement to establish a socially responsible system of private enterprise tempered and sustained by public management when and where necessary. Its emphasis is on democratic procedure to achieve social-economic ends, on tolerance and co-operation in group relationships, on reconciliation of individual opportunity with social guidance.

It is through this movement and the new policies which it sponsored that many of the democratic countries began to rebuild their national economic and spiritual life during 1935-39. But most of their energies went into the process. These countries did not have the capacity—and in some cases the foresight or the desire—to attack international problems in the same positive democratic manner.

It is their failure to carry the same new constructive spirit beyond national boundaries that explains to a large extent the international clash of today. A reorganization of world economics was called for, and such reorganization could not take place peacefully because some nations could not see the necessity of making the adjustments and concessions which would be in harmony with the new democratic national policies.

This failure was unfortunate. It was clearly recognized that the germ of a world tragedy lay in large measures in the inequalities of economic opportunity and standards among different countries, groups and peoples. For over a hundred years it had been hoped that greater equality would be brought about by means of free trade and the free movement of capital and people, but for various reasons this had proved to be disappointing. It was seen that history had demonstrated time and again that, to paraphrase Lincoln, the world cannot endure in peace half rich and half poor, and that the danger was that the struggle for higher

standards of living would again assume the form of a struggle between nations for power and imperial domination. The whole problem of statesmanship was seen to lie in the ability to direct the struggle for higher standards of living into constructive channels by providing outlets for the pent-up economic energies of all peoples and countries. But the failure might have been remedied if the Nazi State had not used it as an excuse for its militaristic campaign.

This is the historic background of the world tragedy today. It is the background of our own need for a program of national defense. Out of this background rises the greatest struggle of history against the age-old predatory imperialism in its latest garb of Nazi ideology and practice.

III

In the light of this picture of world events, our own economic history during the past decade takes on more definite forms. It is a widespread practice among industrialists, businessmen and economists in the United States to decry the decade of the '30's as a period of industrial stagnation and retardation, and to blame this on the "economic panaceas" and "political intolerance" of the period. It is pointed out that the pace of economic advance during the decade slowed down, that production lagged behind the growth of population, and that per capita output and income were less in 1937 or in 1939 than in 1929.

The facts are correct, but they give only half of the picture, if not less. Two developments took place during the decade in the United States, as in many other countries. During 1930-33, the old system of economic and social policies by means of which economic activity had formerly been maintained and expanded, broke down. The causes for this failure may be traced far back to changes in economic structures and processes which cannot be examined here.

It was because the traditional mechanisms and policies failed and the people were unwilling to accept such failure passively, that after 1933 efforts were made to develop a new system of social-economic policies to revive the economic system. This fact more than anything else, characterizes the positive nature of the second half of the past decade in the United States as throughout the democratic western world. It is the attempt to find a new economic basis for a progressive national development by introducing social correctives into the system of private enterprise so as to give it the benefits of public assistance and management and yet retain its essential vitality.

The new system of social-economic policies had not reached in this country as logical or full a development by 1939 as, for instance, in Sweden. It had been more a matter of trial and error than elsewhere. However, the important point is that the movement in the United States to build up a new and socially responsible system of private enterprise is now face to face with the same menace which threatens the movement in other democratic countries. What has happened in the sphere of world events is now reaching us on the more intimate national level. In our own life, we see ourselves menaced, in building our own economic and social future, by the thrust of predatory imperialism which reaches out to all parts of the world.

IV

The clue to economic policy under national defense lies in the historic struggle sketched above. Our policies must be such as will make national defense itself serve the social-economic advance of the past decade.

There are those, of course, who welcome the thought that national defense may provide a temporary relief from the economic policies of the past few years. National defense, they think, will solve at least for a while, the problem of unemployment; it will afford a respite from economic experimentation and from programs of social change. It may, in brief, reverse economic and social trends and take us back to "normalcy" after the style of the last post-war period.

From the perspective outlined here, it would be a serious mistake for any group or for the nation as a whole, to try to use the national defense program to reverse historic processes. The experience of 1920-30 should be a warning to us in this respect, for despite the temporary "normalcy" which was achieved, what actually happened was a development which gave us neither normal national conditions nor world peace. The situation is even more complex today. We bear witness to that fact by speaking of "total war" and "total defense." If these terms mean anything at all, they mean that the policies under national defense are part of the general process which is shaping our goals and ways of living.

Neither would it be wise, even if it were possible, to carry out the defense program so as to leave social-economic conditions unchanged. That would call for policies which would be neutral in their effects and leave

us, say in 1944 or 1945, after the defense program had been accomplished, in the position as of 1939-1940 when it was begun. It is only necessary to state the question in such terms to see that the answer can be only negative.

The fact is that there can be no postponement of action to a so-called "post-war reconstruction." That is one of the essential differences between the present and last world conflict. Hitler is not waiting for the end of the war to make economic and social changes. He is making them as he goes along. Populations are being shifted, frontiers realigned, industries reorganized, trade recanalized—all in the midst of war and as part of the war. It may be said that there will be no post-war reconstruction in the old sense, even if the Nazis are totally defeated. The changes that are being effected will be there to deal with, not to ignore. The Nazis are making changes to build up the imperial structure they have in mind. We must today, and every day of our defense activities, counteract that by reinforcing the democratic structure which we wish to develop.

In brief, we must carry on our program of national defense in line with the social-economic policies which were begun before the defense program became urgent, and which will reassert themselves when the program has been completed. National defense would then be a stage in the movement toward that social-economic condition which, we believe, is most consistent with our ideals of national welfare and human advancement.

V

It is out of the question to try here to translate the general point of view into detailed and specified prescriptions of policy. But some indication of what it involved is called for and an attempt will be made to state the issues briefly.

The most important fact in the situation is that a defense economy, such as we are entering, shifts the center of the economic problem. For almost a decade now we have grappled with unemployment as our central national issue and have sought ways and means of bringing about the full utilization of our resources. Accordingly, we have tried to stimulate consumers' wants as a basis for economic expansion and we have claimed to have ample resources to gratify these wants. Our quest has been for supplemental public means to reinforce private expenditures and enterprise of various kinds and descriptions.

Under conditions of national defense, the problem of unemployment recedes into the background. All the currents of economic life are now favorable to the realization of full employment. Industrial expansion will be stimulated by increased government spending, by new capital formation, by the increasing proportion of durable goods in the national income, and even by net export trade balances. It has been estimated that the full effect of our defense expenditures will make themselves felt by the middle of 1942 or early in 1943, when we should reach a state of full employment of men, materials and plant capacity.

The problem, under defense conditions, becomes one of counteracting the tendency toward the creation of scarcities and of economic unbalance. The question whether our resources are ample enough to meet all the needs becomes much more complex. It will be determined by the pressures which are exercised from the outside by the actual or potential enemies. We must plan not only for the best utilization of what we have, but for the production and procurement of many things from other countries.

It is obvious that a national defense economy stimulates an unbalanced use of national resources. The very idea of national defense, especially under the extraordinary conditions of today, means special emphasis on one particular urgency. Protection is given greater consideration than any other social-economic need. The result is that shifts must be made in the use of natural resources, in the labor supply, in the allocation of funds, etc., in such a way as to create unbalance in the component parts of the national income, in the distribution of industries and labor, in the relation of short-run and long-range considerations, in the relation of savings to current consumption, etc.

The realization of this fact seems to give force to the demand on the part of some groups for what may be called a restrictionist national economic policy. These groups claim that the needs of national defense make necessary a curtailment of non-defense industries, of non-military public expenditures, and of the various government programs for social improvements. To this way of thinking, it seems also necessary to extend hours of work, restrict the activities of labor organizations, etc. The restrictive way of thinking about national economic policy is reflected in almost every important issue which has arisen in connection with national defense. It is, in a sense, a continuation of the traditional trend of thought before 1933.

The general point of view expressed here, on the

other hand, calls for a continuation of an *expansionist* social-economic policy even under conditions of national defense. Such a policy would have as its aim to counteract the tendencies toward economic scarcity and unbalance referred to above. It would seek to maintain as much as possible the public activities now carried on for the improvement of living conditions. In fact, it would expand them in those cases where both national defense and the social good justify it. There is no question, for instance, that there is a large opportunity now, as well as an urgent need, for developing adequate health services for the youth of the country, for improving the training of youth by means of youth work programs, of extending educational and recreational facilities. These services which do not require large capital investments could be developed without competition to the needs of defense, indeed in harmony with them. The same may be true, in a measure, with regard to housing.

An expansionist policy under defense conditions would imply the following specific directives:

1. A government financial policy which aims to distribute the costs of national defense in proportion to ability to pay; which seeks to correct the tendency toward unbalance by increasing consumption and by expending the social services where possible; and which retains expenditures for public purposes to the fullest extent economically possible.

2. The maintenance of a relatively stable price level by means of co-ordinated government buying, prevention of inventory speculation, protection against monopolistic practices, proper cost accounting with regard to government contracts so as to avoid excess profits, reasonableness in wage adjustments, and education of consumer buying.

3. Government assistance and guidance in the location and expansion of plants.

4. Rational management with regard to technical changes, hours of work, and employment conditions. Prolongation of working hours only when and where necessary and with a view to the alternatives of increasing the number employed.

5. The extension of governmental controls only in so far as necessary, and in such a way as to give full play to the action of representative group organizations. The government to act largely as referee and conciliator in settling problems of group relations.

6. Planning ahead for economic expansion and employment as the defense activities begin to taper off. To the extent to which national defense is financed by taxation, certain back-logs of demand will be created. It should be possible to make these effective without waiting till the defense program is entirely completed. As suggested above, in the present situation, the idea of post-defense policy has to be replaced by the idea of continuous action and readjustment so that we shall be able to carry on in 1944 or 1945 without a dangerous break in economic and social relations.

VI

The suggestions made above call for further study and thought if they are to be useful in the making of national policy. Much research is being done today in Washington and elsewhere which bears on the issues raised—but there is need for focussing more directly on the various problems and to relate them to the thinking of various groups of the population.

There would be little use in adding to the number of administrative and research agencies now in existence. But there is need for more policy-shaping and policy-forming which would be representative and co-ordinative. That is called for more than ever now by the historic task of reconciling defense with social-economic policy in a general program of national advancement.

Discussion

S.A.M. and Preparedness

By ASA S. KNOWLES

Vice-President of Chapter Organization and Activities
Dean, College of Business Administration, Northeastern University

AS VICE-PRESIDENT of S.A.M. Chapter Organization, I have been invited to participate in the annual program to make some statement regarding the Society's role in the present national emergency, its present activities in this connection, and in particular to outline what appears to be the Society's best course of action in the near future.

The Role of the Society in the Preparedness Program

Everyone is conscious of committees appointed by

professional societies, governmental agencies, chambers of commerce, and a host of other organizations that are designed to co-operate in promoting national defense. Their existence represents a splendid demonstration of our patriotism, but their functions are not always clearly understood, and there is great danger of their becoming just "front" or "window dressing." Unfortunately, hysteria is always rampant in an emergency period, and it usually crystallizes in a desire to do something. In organized groups the appointment of a committee or council on national defense is a natural result. Unless these committees have clearly defined functions at their inception, their activities are more apt to impede, than aid our national efforts toward preparedness; i. e., the major portion of defense activities must be initiated, controlled, and co-ordinated from a central source; otherwise, there will be duplication of effort and confusion.

It seems wise, therefore, that S.A.M. avoid "jumping the gun" in this connection, and in the meantime build solid fences at home. Until it is called upon to render a particular service, it appears that S.A.M. can be most helpful in promoting the national defense program in these ways:

1. Compile adequate records of its membership and their special abilities which can be used on short notice if need be in securing men with special skills and abilities to serve our national defense program.

2. Develop and conduct worthwhile programs which will be informative regarding management practices in industry which can assist in improving efficiency and industrial morale during an emergency period.

3. Devote proper attention to those considerations which must be met both now and in the future in order to preserve reasonable industrial stability both during the present emergency and in the post-emergency period. This requires the development of sound thinking along management lines.

Some among our membership have expressed concern that more private management consultants have not been asked to assist in the mobilization of industry; they have urged that S.A.M. furnish immediately to the agencies in Washington concerned with national defense the names and qualifications of our members now engaged in the management consulting field. Undoubtedly, as the defense program progresses, a number of these individuals will be called upon for special service. It is important to bear in mind, however, that for several years both the War and Navy Departments have been training staff men at the Harvard Business School and elsewhere to deal with the problems of industrial mobilization in emergencies such as the present one. This explains in part why some private management consultants have not been sought up to the present time.

In many respects, it is an advantage to our country that the government has trained its own industrial mobilization staff, because it enables consultants and others who have special services to offer to make themselves readily available to private manufacturing industries where consulting management services will be needed increasingly. If S.A.M. is to compile a list of recommended industrial consultants and advisors, it will perhaps have a maximum usefulness if it is made available to United States manufacturers and others engaged in defense work in a private capacity.

Present S.A.M. Activities with Respect to Preparedness

To date, S.A.M.'s activities in promoting national defense are these:

1. The Society, through its headquarters office, has made known its willingness to co-operate with the War and Navy Departments and the National Defense Advisory Commission by way of recommending personnel. Within a short time, members will be invited to reply to a questionnaire, furnishing statements as to their qualifications to serve the government in the present emergency.

2. ADVANCED MANAGEMENT has been among the first to present timely articles dealing with the management problems of defense industries and subjects devoted to means of improving our industrial efficiency.

3. Nearly all the Chapters are conducting programs dealing with management under a mobilization economy. Outstanding among these are the Washington and Philadelphia Chapters, which have held meetings in which persons prominent in the Federal Defense Program have participated. Special invitations to attend these meetings were extended on a national scale. One Chapter in particular has offered its services to its state committee on national defense.

4. In addition, the majority of Chapters continue to conduct their Round Table and Special Group Meeting programs, which are designed to help train industrial leaders—a primary requisite of national defense.

S.A.M.'s Future Course of Action

Management principles do not change under a defense economy, but their relative importance is constantly

shifting. Some achieve an entirely new significance and demand new emphasis, while others that deserve most attention in time of peace may become relatively unimportant. S.A.M. Chapters can render a real service to their local members, and through them, to the nation by continuing to arrange and conduct local programs which call attention to sound principles of industrial management which are of value in enhancing our industrial efficiency during the present emergency. A special effort must be made to arrange programs dealing with the problems of industrial organization arising out of the present emergency, and which must be considered at this time if industry is to remain reasonably stable in the post-emergency period.

Progressive United States business leaders recognize already that regardless of the outcome of the war, business for American industry, both abroad and at home, will be available only under the most severe competition. Germany's attitude toward American competition is already known, and it is increasingly apparent that England is making contracts with many foreign nations which will require the continuance of trade in the post-war period if England is to pay for the materials she is now receiving. Consequently, American business will be "on the spot," and it is important not only that this trend of events be recognized, but also that the attention of business leaders be directed toward an appreciation of the problems of management inherent in this situation. Outstanding among the considerations to be met are the following:

1. *Control of Productive Capacity.* Increased capacity may be obtained by adding workers and increasing the number of shifts, adding or installing new equipment in making plant arrangements, improving methods for establishing new facilities. Moreover, the changing of federal legislation to permit a longer working day is thought by many to be necessary if we are to increase capacity. (There is some contention as to whether or not efficiency will be impaired but many think that workers will be released to provide the skilled labor needed in new and expanding plants.) Except in industries where only new facilities can meet defense requirements, production and expansion should be met by other means. The construction of new plants not only causes unnecessary delay in expanding industrial capacity, but also adds unneeded capacity in many industries to be paid for at government expense or through increased production costs to be borne by the manufacturer. Neither method can contribute to lower post-emergency production costs.

2. *Acceleration of Decentralization.* The defense situation demands that plants be located in zones that are safe from border or air attacks, and that plants be widely scattered in order to reduce the risk of impairment of operation in time of war. This demands the relocation of some plants, shifting of orders from one locality to another, and the building of plants in locations which may be economically unsound; i. e., plant locations selected to enhance the war usefulness or safety of an industry, may not be a profitable location in time of peace.

The decentralization of industry is already raising havoc in a number of sections of the country, and the post-war effect of the present activities can only add to what has already taken place. It is most important that plant location be given careful management consideration if America's production machine is to continue to operate at a minimum of cost.

3. *Expanded Public Ownership.* As a result of the present emergency, public ownership of manufacturing industries must increase. The government can act quickly in locating plants without regard to profits, and does not need to concern itself with tax problems regarding war profits and plant amortization. Private management must recognize that an increase in government-owned plant capacity in any type of industry has potentialities of changing an industry's entire competitive situation and perhaps its existence. Private enterprise must recognize that in an emergency period, the government must turn to owning and operating plants in those fields where private management cannot meet the challenge. When industrial management is "on its toes," government intervention will be less pronounced.

4. *Consolidation of Small Units.* In the interest of efficiency, many small units of industry must be combined into single, larger units. This will facilitate the placement of orders and make possible the application of the best principles of management in new shop arrangements. From a management-cost point of view, however, large establishments have higher overhead costs and are less adaptable to changing conditions than the smaller ones. Plants with high overhead costs may be at a disadvantage in meeting competitive prices of foreign producers in a post-emergency period. Sound management demands that industries recognize this as a real problem to be met not only in terms of the present, but also the post-emergency period.

5. *Supervisor Training.* In its eagerness to meet the demands of industry for skilled labor, management

seems to be overlooking the need for training supervisors and shop leaders. Industry cannot afford bottlenecks due to labor strife and inefficient production due to poorly trained shop supervisors. Tomorrow's supervisory personnel must be trained today. In this connection, management is faced perhaps with its greatest challenge; i. e., the training of competent supervisors in a relatively short period of time. A professional society can be helpful in many ways in paving the way for effective and quick "in service" training of supervisory personnel.

6. *Increased Application of Methods.* The present and future low-cost operation of a manufacturing industry demands that managers pay attention to such matters as job analysis, employe training, shop layout, efficient production control, proper materials handling, etc. The time was never more auspicious for American mangement to demonstrate the value of its techniques developed and perfected during the past two decades. The professional management society can do much to encourage the use of these techniques and to disseminate information about them in those quarters where added information is necessary.

7. *Teamwork Demanded.* Finally, management must give increasing attention to the development of teamwork; i. e., all causes for unnecessary friction must be removed. The services of individuals whose attitudes and actions militate against harmonious efficiency must be dispensed with in the interests of promoting a wholehearted, co-operative effort toward increased and more rapid production. As a corollary, supervisory responsibilities must be clearly defined, work instructions made clear, and proper standards established. These and every other concept of sound personnel relations deserve emphasis at S.A.M. Chapter meetings because they are fundamental in our national organization for defense.

There are other important problems of management which have a direct bearing on the improvement of our manufacturing efficiency during the present emergency and the enhancement of industrial stability in the post-emergency period. Their significance must be carefully studied, analyzed and reported. S.A.M., as a society interested in the development of sound management to promote increased industrial efficiency can perhaps render no better service through both its Chapters and the national organization than to continue to conduct its programs devoted to reemphasizing and developing sound management thinking. This path is not one of spectacular venture, but in the long run, it will render the greatest possible service to our membership and the nation's industries which we want to serve.

What Labor Wants from Management

(Continud from page 12)

recognition. It is coming as sure as death and taxes, and management had best adjust itself to this fact, graciously and quickly.

In conclusion, I repeat, labor wants management to get on with the job of national defense by getting on with labor.

I have tried to speak earnestly and candidly this evening. To be sure, I may be wrong in certain details; but basically and essentially what I have said this evening is not far from the facts as I see and understand them. I have chosen to get to the core of the problem of our industrial relations. Believe me when I say these are critical times. If you sense a tone of impatience in my remarks, it is not due to any diminishing of my faith in the slower processes of democracy. It is due to a keen realization that these critical times require quick and judicious action. The road toward the greatest productive achievement in history is open to management and labor. All management needs to do is to provide labor with the opportunity and the incentive for constructive co-operation in the solution of our common problems. The benefits to be realized by all of us will more than compensate for sacrifices required by any of us.

Some Fundamental Contributions of Scientific Management

Developments in the Science of Administration

By HOWARD COONLEY
Chairman of the Board, Walworth Company, Inc., New York

SCIENTIFIC administration cannot be achieved through a mere organization chart, to which are appended definitions of jurisdiction and rules of procedure. It is an animated creation, of which the chart, rules and definitions form the skeleton and the personnel the flesh and blood that articulate the jointed frame and cause it to function. To be healthy, the skeleton must have a sound bone structure, the flesh must be well knit but supple, and the blood stream supplied from an active heart.

In my boyhood days, when I played in the sandpile of my father's foundry, administration had few aspects of a science. Supervising a business while involving practical knowledge, long hours of work, ability to gain confidence and a Scotch aptitude for finance, was a comparatively simple affair, in tune with the simple home life of the people of that day. But when, in 1900, I became an active participant in an effort to provide for myself, industrial and commercial units were growing apace, mass production had started, administrative problems were becoming complex, and life itself gaining in speed and excitement.

Fortunately for me, my path led me to associate with men of ability and vision. In those early years I learned of the revolutionary ideas of Frederick W. Taylor, ideas that were frowned upon by the business elders at my family fireside, but extolled by a few of the younger statesmen to whom I looked eagerly for guidance. I was even taken by one of these to a great gathering, at which Mr. Taylor was the only speaker. That single evening convinced me that administration was a science, the intricacies of which held and still hold many discoveries for the alert explorer.

The advances in the application of science to management have been rapid since the turn of the century. The enlargement of units and the exigencies of the World War speeded the development. Today our national defense program requires a reappraisal and readjustment to meet our urgent demands.

I would be the last to say that administration is a definite science. Yet it is my firm conviction that no organization can reach its maximum efficiency without a chart to guide it, a definitive explanation of the rules which should be followed, as well as an understanding of the authorities and responsibilities which are delegated to its crew. At the same time, I feel that the rules should be moulded to the characteristics and abilities of the captain and his aids.

During my college days I rowed in a crew coached by a clever Irishman. He picked his candidates, not as much for size or strength as for adaptability and rhythm. He chose for stroke a little chap with speed and a marvelous sense of timing, and cut down the blade of his oar. He shifted the spacing between the outriggers of the other seven to suit their leg length and body swing. In appearance, the result was certainly not attractive, but the crew could beat anything on the basin.

One of Frederick W. Taylor's famous sayings is: "There is one best way." With this I agree. I wish, however, I could be sure that my way is that best way. In any event I offer you the best I can produce.

For efficient administrative results, my preference is that no more than six executives report directly to the chief administrative officer. Of these at least two should be staff rather than line officers.

The top sales executive, production executive and the comptroller — or the treasurer where he fulfils the functions of a comptroller — should definitely be responsible directly to the chief executive.

The head of the engineering department, whether functioning as a line or as a staff officer, should also report directly. Engineering design, production standardization and participation in the establishment of national standards has taken on a new significance under the pressure of our defense program. In fact it is my personal belief that defense requirements are forcing chief executives of many companies to recognize for the

first time the vital part standardization plays in the success of their institutions.

The head of the public relations department should report direct to the chief administrative officer.

The rapid advance through legislation and public opinion of a demand to provide social security protection for the employe, as well as a growing recognition on the part of management of the obligation to regain and maintain the goodwill of the American people, while establishing closer contacts with stockholders and customers, have called for a new type of service which in turn has developed a new science as an implement of modern administration. This service is called public relations. Properly staffed and intelligently planned it can not only increase goodwill but can contribute to profitable operation by providing a channel of free exchange of ideas within the organization and between the organization and the outside world which provides its market.

A personnel officer (clothed with a mantle of importance) should also key to the chief executive.

Personnel problems, whether of hiring and firing, training and adapting, supervising health, safety and sanitary conditions, or of the more intimate type of psychological adjustment, have taken on added significance during recent years. To supervise these immensely important problems requires an individual of unusual understanding, stimulating personality and sound judgment.

So much for the substance. Now for the form. Another of Frederick W. Taylor's tenets was that research and planning should come before execution.

My first planning implement is a *chart* to illustrate the organization set-up, the individual responsibilities and the lines of authority.

To this I append definitions of each position to indicate individual responsibilities and authorities. These are outlined in a set of *general orders*. This was a term we employed in the emergency fleet corporation during World War No. 1. It has served its purpose so well that I have never found reason to shift. These general orders in fact have only been changed to provide for some additional high executive position or some readjustment caused by major policy change or expansion of the field of activity.

The less important supervisory functions and the various procedures are taken care of by memoranda entitled "special orders." These may be changed as often as seems advisable but always indicate previous special orders to be cancelled or amended as required.

I go into this detail because I feel it an important, though not recent, adjunct of administrative procedure. In a corporation of considerable size it seems to me good practice that each member, whether supervisor or clerk, should have a clear understanding of the authorities and responsibilities of the higher executives and a knowledge of the procedures which determine their action.

No matter how excellent the plan of organization or how ably it is staffed, to function effectively it must have a well-devised map to guide it, based on information both factual and estimated, produced by expert accounting and research staffs. For this it is essential that a system of complete budgetary control be provided supplemented by a statement that may be called "sources and application of funds." Such studies should be supervised by the comptroller.

To have its maximum value the budgetary control figures as well as the application-of-funds statement should be set up for the full fiscal year, broken down by quarters. This will necessarily involve many estimates. But experience has proved that a capable economic research staff which has had sufficient time and experience to study the cyclical trends that affect the individual industry and the sources of outlet for the particular company's product, can make a prediction sufficiently accurate to serve the purpose. Naturally the sales estimate is the keystone upon which the other budgetary elements must be based.

In actual practice the quarterly budget should be relied on to determine definite action and this should be adjusted monthly by comparing estimates with actual figures and thereafter making such modification as judgment dictates. The great advantage of budgetary control is that it provides the executive with a scientific set of instruments with which to measure the wind and weather that influence the direction of his craft.

Even in such a hurried review, I cannot omit the importance of effective inventory control as a tool of management. In these days when service is a vital consideration and regularization of employment an essential factor, the sound and detailed determination of inventory authorizations, free from domination of production executives, may prove a deciding element in the success or failure of the company's record.

Time does not permit special comment on such essential functions as research into the specialized fields of new products, product and method improvement, including design, chemistry and metallurgy. These are the bloodstreams of progress but could properly come

under the jurisdiction of one of the top executives whose functions I have touched upon.

All individuals charged with important duties should have access from time to time to the chief administrator to keep him in touch with their plans and progress, to advise with him, and to gain the stimulus of his experience and personality.

Frequent conferences, small and large, called by the chief to discuss policies and procedures, to develop viewpoints and gain a broader background for decision, are important administrative tools and help to inform and educate. Not only is contact with the organization at home and afield an important function of the chief administrative officer, but conferences with stockholders and customers, where possible in their own headquarters, on a basis of friendliness that generates frank and free exchanges of opinion, is both wise and helpful. In other words I urge the open door policy.

I have not mentioned heretofore the advisability of the busy chief administrator having an executive assistant. That seems to me a question of individual choice and characteristics. In many instances, and with some individuals, such an assistant clothed with limited, delegated authority, can prove exceedingly valuable. But it would be indeed unfortunate to have the executive assistant limit or take the place of direct contact between the chief executive and his immediate subordinates.

I would be remiss did I not include in this brief and, I fear, inadequate review of the development of the science of administration some reference to the board of directors. They after all are the representatives of the stockholders and the overlords of the officers. No board of directors made up of men not active in the organization, can have knowledge of the details of the business or be in touch with the effect on its progress that their policies and decisions exert. Yet if properly chosen such directors can bring broad experience, fresh points of view and, therefore, wise council and guidance to the administrator for whose selection and retention they are responsible. Again their value must depend largely on the completeness of the facts presented to them and the clarity and frankness of the presentation.

One of the most important instruments of scientific administration is frankness—frankness to employes, to stockholders, to customers, to the public. And an absolute essential of this science is business integrity—sound and fair business ethics and practices.

Production Planning in this Period of Industrial Preparedness

By WALLACE CLARK

Wallace Clark & Company, Consultants in Management, New York

OF THE many contributions of scientific management, one of the most notable is production planning. Its benefits are tangible, and it is accepted and used not only throughout American industry but in every industrial country of the world. The Soviets developed their "Gosplan" on the basis of this American technique, and for many years the German Nazis have been assimilating our methods and applying them in every phase of industry, bringing them to their greatest degree of efficiency in the "blitzkrieg."

This New World technique of planning, conceived for the benefit of mankind, has thus become an instrument for destruction in the hands of Old World dictators, who are now preparing to use it against its creators.

The question before America today in this period of industrial preparedness is: Can we take hold of this, our own tool of management, and use it in some way which is impossible to the dictators? Can we outplan the "blitzkrieg"?

The answer is not easy. In Nazi Germany the techniques of American management, especially planning, have been introduced into every part of the national economy and have secured a high degree of integration, with tremendous increase in production. Their autocratic use of these techniques has an advantage in clarity of aim, singleness of purpose and full agreement as to methods, even if that agreement is forced. An unusually keen sense of timing, combined with accurate planning and unquestioning execution, makes it possible to launch their projects with greater speed and force than can their opponents. But although the totalitarian planners have borrowed these American techniques of planning, there is something that they have not bor-

rowed and that is the factor which can and will defeat them. It is the democratic structure of American planning.

The pioneers in management—Taylor, Gantt, Gilbreth and others—had an unselfish purpose and developed principles and methods for the use of all men. The planning methods, which have developed from their fundamental principles, are known, are available, and are now used in the greater part of American industry. These methods have a broad base. They are built from the bottom up. On the simple and practical daily planning in all of the shops or departments of a business there is erected a central planning which co-ordinates and directs the plant as a whole.

The development of these methods has been influenced by the American character. With their habit of independent thinking, the men in the shops refuse to agree that all knowledge is at the top or in the Central Planning Office. The unusual capacity for team work, which is characteristic of American shops, requires flexibility—a spirit of give and take rather than a rigid method of management. Absence of class lines makes it out of the question for an intelligent workman or foreman to follow orders blindly merely because they come from white collar men. These shop men think "on their feet," independently; they can meet unexpected emergencies quickly. That is what men cannot do whose every move and every thought comes as an order from above.

As we all know through daily experience, the most successful plants are those in which shops and departments have their own internal planning and the central office co-ordinates the work of these shops and determines the sequence of orders. This planning is democratic, that is, each one along the line has a field of action for which he is responsible, and he receives from the executive above only those instructions which are outside of his competence.

As planning is built upward, the horizon broadens. The workman concentrates his mind and energies on the particular job he is doing and on preparing for his next job. The foreman uses his foresight and experience in planning a day's work ahead to get the best results from his men and machines. Based on the shop capacity which the foremen are able to maintain, the Central Planning Office schedules all orders months into the future. The executive in charge of production has to plan at least for the coming year. The chief executive develops policies and plans many years ahead.

Built from the bottom up in this way and permeated by a democratic spirit, planning becomes a powerful instrument. Each man, from the workman to the manager, is engaged in it creatively; he has his field and within it he uses his initiative and his independence of thought and action. This is the spirit in which the American planning methods were created and in this vital respect they are fundamentally different from dictator planning.

Heretofore our use of this tool has been scattered. If we can get together and use it to the full, as purposefully as have the dictators, nothing can withstand it.

From the management viewpoint, it is imperative to realize that time is of supreme importance. All of our skill, experience, science and energy must be co-ordinated and concentrated on speed.

In every plant which is in any way engaged in defense production, the manager must take full responsibility for making deliveries at the times agreed upon. He must look ahead, foresee difficulties and take steps to overcome them. He must not shrug his shoulders and say that he is not to blame if Washington does not send the drawings or make the decisions he needs in order to go ahead. He must know in advance what information or decisions he will need and must get them by whatever means he can. He must make use of his internal planning and know to a high degree of accuracy what production he will be able to get out next month, and he must tell Washington what can be expected of him, so that the many components or related items may be balanced.

In the last war the schedules of manufacturers were scarcely worth the paper they were written on. Now, fortunately, the technique of planning is so well known that there is no excuse for loose schedules, and the situation is so serious that every industrial executive should make use of the best techniques of planning available and the most effective methods of dynamic executive direction.

The most difficult task of all is the production planning in Washington. It is there that the three major decisions must be made in order to prepare successfully for total defense: What items must be produced? In what quantities? To be ready within what periods?

These decisions have been made for all the important defense activities. We are at present in the period of finding or creating facilities for the production of these required items in the quantities and at the times they may be needed.

That is a task which requires the most highly devel-

oped techniques of planning that can possibly be brought into use, and it is in that field that this management group can be of great assistance because of its knowledge and experience.

The timing of our direct or indirect participation in this war must be based not on our stocks of munitions, for we have practically none, but on expectations of production; that is, on what the chief executive and his advisers believe will be available in future. They must have before them facts that are accurately and fearlessly stated. Their decisions and tactics must rest on a secure base of co-ordinated plans. Each failure to live up to a program, no matter who is to blame, weakens the structure on which our over-all planning is built.

Thus the responsibility for the success of production planning in this critical period is squarely up to each one of the industrial plants engaged in defense work as well as to each Government office.

If America will use her own tools of planning in the spirit in which they were created, the result will be as revolutionary as was the invention of these tools. Autocratic methods cannot in the end stand up against democratic planning which draws forth the full creative powers of free men.

Time and Motion Study

By ALLAN H. MOGENSEN
Industrial Consultant

FOREMAN: "The piece rate on that job is absolutely fair. It was set on the basis of a very careful time-study. I know the rate is right and, just because that man hasn't bothered to learn how to figure out his piece-work earnings, there's no reason why he should be putting up a squawk about his pay being wrong every payday!"

THE MAN: "There is something screwy about this pay system! Somewhere up in the office they go through a lot of pencil gymnastics and come out with a figure that they put on my pay check. How do I know that I'm not getting rooked?"

This appeared under the heading "Three Sides To Every Question" in a recent issue of *Management Information*. It has been said that there are three sides to every question—your side, the other fellow's side and the right side. Ever since Frederick W. Taylor's time there has been an atmosphere of controversy continually surrounding time and motion study. Perhaps we have heard so much about these two sides in all of these years that little attention has been given to the right side. Taylor said, "Time study is by far the most important element in scientific management." Despite the truth of this statement there has been little real constructive work done since Taylor's time. If you doubt this, read Taylor's outline of true time study as he envisaged it:

Analytical Work

1. Divide the work of a man performing any job into simple elementary movements.
2. Pick out all useless movements and discard them.
3. Study, one after another, just how each of several skilled workmen makes each elementary movement, and with the aid of a stop watch select the quickest and best method of making each elementary movement known in the trade.
4. Describe, record and index each elementary movement, with its proper time, so that it can be quickly found.
5. Study and record the percentage which must be added to the actual working time of a good workman to cover unavoidable delays, interruptions, minor accidents, etc.
6. Study and record the percentage which must be added to cover the newness of a good workman to a job, the first few times that he does it.
7. Study and record the percentage of time that must be allowed for rest, and the intervals at which the rest must be taken, in order to offset physical fatigue.

Constructive Work

8. Add together into various groups such combinations of elementary movements as are frequently used in the same sequence in the trade, and record and index these groups so that they can be readily found.
9. From these several records, it is comparatively easy to select the proper series of motions which should be used by a workman in making any particular article, and by summing the times of these movements, and adding proper percentage allowances, to find the proper time for doing almost any class of work.
10. The analysis of a piece of work into its elements almost always reveals the fact that many of the conditions surrounding and accompanying the work are defective; for instance, that improper tools are used, that the machines used in connection with it need perfecting, and that the sanitary conditions are bad, etc. And knowledge so obtained leads . . . frequently to constructive work of a high order, to the standardization of tools and conditions, and to the invention of superior methods and machines.

While this was written back in 1895, an honest check will reveal that we still have a long way to go really to apply some of the essential parts of time-study procedure if we are to practice it as defined by Mr. Taylor.

Items 4, 8 and 9, for example, have been practiced by individual firms to a limited extent, but as yet we have none of the basic data available here that is available to German industries and has been for many years.

In item 10 he outlines what I like to call "motion and time study." Some of the steps he outlines are the first steps followed by any group in undertaking a work simplification program, and any methods engineer who plunges into rate setting without first giving real attention to the procedure outlined here is bound to continue the dispute that has surrounded time study all these years.

I feel that the greatest mistake that has been made by management over the years since Taylor has been the failure properly to understand the difference between work done at high speed and work done in a hurry, and I place the blame here squarely at the door of management, not on the backs of labor. How can any manager who is "too busy to be efficient" blame his workers for misunderstanding the purposes of time study and incentive wage application? The usual procedure has been to set the rate and then leave it entirely up to the foreman or perhaps even the worker to see that this standard can be met. Work done at high speed will give you perfect work, because it is accomplished by eliminating the unnecessary parts of the job. Work done in a hurry will give you poor work because it is a speeding-up of all parts of the job, both necessary and unnecessary, and is bound to lead to dissatisfaction.

Undoubtedly the years since Taylor have seen considerable perfection of time-study and stop-watch techniques. I predict that the future will see the use of training programs in work simplification so that eventually every single worker in the plant will have a correct understanding of these principles. The workers will have a far greater share in developing the method to be used. The elemental break-down of the operation will not be filed away in the time-study department files, but will serve as the basis for concise and yet simple instruction cards for every operation. These instruction cards may even be made in the form of right-hand and left-hand process charts. Motion pictures will be used to a far greater extent, first in developing an interest in work simplification, then in working out the "one best way" of doing the job, and finally for operator training in teaching the person best suited to do that job the one best way.

There is no dispute with labor, either organized or unorganized, when these steps are followed correctly. The methods engineer is not regarded as that "so and so with the stop watch," but as a friend, adviser, helper and teacher. This will preclude the use of ex-clerks and college students working in the plant for the summer. It will definitely mean the employment of a much higher type of individual. By this I do not mean that he must be an expert in the operations performed in that plant, or that he have many years of experience in that particular plant.

He must, however, be an expert in the art of human relations. He must know how to get along with people. He must be a teacher. In fact, I would require about ten percent *time-study engineer* and about ninety percent *human engineer*.

I doubt if I can better outline this field as I see it in the future than to quote Frederick W. Taylor's definition of scientific management. He said it consisted of:

1. The development of a true science
2. The scientific selection of the workman
3. His scientific education and development
4. Intimate, friendly cooperation between the management and men.

How much better it would be if most of us stopped trying to develop new formulas, theories and other complications and set to work really to apply Taylor's principles.

Scientific Selection of Industrial Labor

By MILLICENT POND
Employment Supervisor, Scovill Manufacturing Company, Waterbury

THE six papers of this afternoon's session constitute our "Hail and Farewell!"—to the twenty-five years just past. We are not saying "Farewell" to the words of Frederick W. Taylor, however, and I call your attention particularly, in connection with my own topic, to the first phrase and the last in the quotation on our program: "Science, not rule of thumb. . . . The development of each man to his greatest efficiency and prosperity."

Twenty-five years ago, the measurement of human abilities even outside of industry was very young, and it cannot be said to have started at all within industry, although this application had been suggested by Hugo Münsterberg, at Harvard. Outside of industry, among psychologists, there was tremendous interest in the field of mental measurements, for within the ten years preceding our quarter-century, the great French psychologist, Binet, had formulated certain principles of measurement, which galvanized the work already started by American psychologists.

The problem at that time was the measurement of the capacities of normal children, year by year, in order that the more limited capacities of subnormal children could be defined in comparison. By 1910 an adaptation of Binet's tests had been made for American children, and in 1916, twenty-four years ago, the Stanford revision was published. You are well aware of the importance in this field of the Stanford-Binet scale for testing the mental development of individual children, and you probably know that its great significance lies in the fact that before publication, every question in it was both selected and scored on the basis of the actual performance of a large number of children at each age level. That is, every question was submitted to practical test before the scale was released for use.

In 1917, when the United States entered the World War, and a group of psychologists was called together to devise and standardize tests for the classification of soldiers, the problem was radically different. This was a matter of testing adults, in large numbers, with wide variations in schooling and language. Already the psychologists had advanced the science of testing, and all of their experience was pooled. Group intelligence tests were constructed, both verbal and non-verbal (the latter for use with the illiterate or non-English speaking recruits), and tests of trade knowledge and trade skill were also quickly assembled. Perhaps you do not know that in spite of the demand for speed, these tests were also tested, before they were used for classification. The work was brilliantly done, and it was carefully written up after the War.

At the close of the War, the imagination of industry was fired. Here, indeed, was a tool for our use. All of the principles of testing that we use today, with the exception of some very recent developments in mathematics, were known then. We could have gone ahead. However, the enthusiasm of industry soon died down. We were fascinated by the idea of a perfected instrument, and could not face the fact that further research would have to be done in each organization before testing could be depended upon, whether in fairness to the individual, or for increased efficiency in the organization, in the selection of factory workers. The dream had been bright, and the awakening was rude. With business depressed, and workers laid off, it was unthinkable that salaries should be paid for research in such a new and "non-essential" field. Organizations that had started to study tests, dropped them. Unfortunately, it was even worse than that, for some of the industrial firms did not waken from the dream, but continued the pleasant fancy that somewhere a system could be found, without trial or percentage evaluation, which would select employes perfectly. They decided that the psychologists, who would not promise them success without labor, were not practical, and they turned to untrained men and women, who promised everything. Thus phrenology and physiognomy, based upon entirely unsound and even disproved theories, with no arithmetical check whatever, made temporary but repeated killings. To this day you can find them, under special names, and pay them your money if you want to.

Gradually, a few firms started in on the inevitable task. The Winchester Repeating Arms Company had sponsored pioneer work by Henry C. Link just after the war but had dropped it; the Dennison Manufacturing Company, the Western Electric Company at Hawthorne, the Scovill Manufacturing Company, the Street Railway Companies of Philadelphia, Milwaukee, and Bos-

ton, Procter and Gamble, the Southern California Gas Company, and a few others, carried on research in the selection of factory workers prior to 1930. For those who did start at this time it was a fortunate period, because of the large number of employes hired in the years just preceding the depression. These men and women were the subjects of the test studies, and there were plenty of them.

So far as the general delay in starting test programs is concerned, however, there may be as much gain to industry as loss, for in the meantime, outside of industry, a great deal of work has been done, advancing man's knowledge of human abilities, and perfecting his techniques for measuring them. The work of the colleges, schools and clinics can still not be taken over by industry without validation, since these institutions do not deal with occupations, nor have ready access to factory populations, but their offering to us is rich. New and promising types of measurement have been attempted, and a new mathematical treatment is available for those who can use it. These new tools are too numerous for me to outline to you, but I know you will want me to mention the promising work in the measurement of attitudes, which you know through the Gallup polls, and the attempts to measure certain other aspects of personality. One great advantage for industry, derived from this work, is that the general antipathy to the idea of testing has definitely diminished, and need not arise again so long as tests are used soundly, which also means, with justice to the persons tested. Another advantage is the fact that the psychologist has more to offer industry in other fields today, such as in the training for skills, the recognition of maladjustments, etc., than he had then. He need not come to you only as a mental tester. Finally, and of great importance, it seems to me, the development that has taken place in motion study, and the renewed interest in job analysis, may at long last bring the engineer and the psychologist closer together, to their mutual advantage. The psychologist needs the help of the engineer, in determining which, after all, are the better or the poorer workers, against whom he must check the tests before he can claim that they will select better future workers; and the industrial engineer, dealing constantly with workers, sometimes teaching them, sometimes wondering why they rebel—could he not use a few morsels of information from the psychological laboratory?

Hardly separate from industry, but still outside of it, were the extensive psychological studies of unemployed adults of usually employed groups, carried on as community projects in Minnesota and New York, during the deepest part of the depression. The spiritual, if not actual, successor to these activities is the fine research for the last five years of the Bureau of Employment Security of the Social Security Board. Carried out partly in State Employment Service centers, and partly in Washington, this work involves tests for abilities, and trade tests as well, which, with the co-operation of many employers and employes over the country, will be validated on actual workers. More than this, a dictionary of occupational titles, with job descriptions, gathered from all over the country, has been published, and a great deal of effort has been given to another project, that of determining quite factually, all occupations in which skills or requirements are sufficiently similar so that workers could be transferred from one occupation to another with slight retraining, even if the apparent differences between these occupations are such that we have not heretofore considered them similar.

Now with this outline of the enrichment of the general field of ability testing lying outside, let us return to our factory walls. In the past few years there has occurred a widespread renewed interest in the selection of employes by test, and a gradual increase of firms which have engaged in the necessary research. Already, where psychologists have been retained or consulted, good reports have started to appear from these firms. At the present moment the interest is high, but I can see that impatience is again rising with it. The dream of a single, perfect test has returned.

Business conditions are once more excellent for test research, and our need is great. The progress that has been made in industry is greater in the way of tests of intelligence and aptitudes, than in the tests for skills. Under present conditions, industry is accepting a wide range of proficiency in the skills, but is anxious to select able persons for training, and the more quickly the training can be absorbed, the better. This is the very service which the tests of intelligence and aptitude are best suited to give. What will industry do? Are we going to miss the opportunity again, declare that we will accept an easy procedure only, that we will do no work? Or can we this time lay a true foundation for the development of a science in which we are really interested? The answer, I am sure, is still in the balance.

The foregoing discussion has set forth in general terms the situation in the scientific selection of factory workers in America, today. It is certain that the time is here for effective future development.

Scientific Management in Distribution

By PAUL T. CHERINGTON
Partner, McKinsey & Company, New York and Boston

IN PRODUCTION, administration or management, the establishment of facts, the development of standards and the exercise of control all lead up to co-operation or balance between interests which might conflict. In marketing or merchandise distribution operations nothing so much clarifies and makes effective the processes of buying and selling as to follow the same formula—facts, standards, control, balance.

Dr. H. S. Person in describing the essentials of scientific management describes in the following terms this final stage which he calls "co-operation":

> Durably effective management requires recognition of the natural laws of cooperation: involving the integration of individual interests and desires with group interests and desires and of individual capacities with the requirements of group purposes; . . . .[1]

This is a plain recognition of the importance in human relations of this principle of balance of interests between the individual and whatever groups his activities may touch. And while Dr. Person puts the emphasis on co-operation, it might quite logically be placed on the presence of this need for balance between the individual and the group, for which co-operation may be one means of expression.

In marketing problems there is present at all times the need for a clear vision of the relationship between the *personal* and *social* interests of both producer and consumer. And concerning the nature of these two interests and their relationship much has been learned in the past quarter-century.

We have long been told of the defects of private enterprise as illustrated by evidence of its shortcomings in practice. We have been made aware that overemphasis on private interests leads to, or actually is, greed or extortion or some form of non-social development. Against this have been set the glowing accounts of what a completely socialized state or complete emphasis on the social aspects of life could do for us if it were given opportunity.

And all this led quite often to the assumption that personal interest was basically wrong and social interest always was basically right.

During recent years, we have for the first time, accumulated a substantial amount of experience with this exclusive social emphasis in practice; and somehow it does not look quite as effective and satisfactory in practice as it does in imagination, or in principle, or theory. It has a way of breaking down and inviting a strong, imaginative individual to salvage the wreck. In Russia it developed into a dictatorship; in Germany by a different route it came by way of collapse to the same end; in Italy the socialism may not have been so pure, but it ended in a dictator just the same. In France because no dictator came to the front to take charge at the crucial moment, it ended in an appalling breakdown when put to the test of dynamic operation.

Perhaps it may not be fair to lay all these results at the door of socialism; but by the same token it is not fair to lay all the unsatisfactory results in non-socialistic societies to the presence of private enterprise. It seems to be increasingly clear that the two forces are essentially different in kind; one is dynamic, impulsive, creative, and each needs to be controlled; the other is essentially regulative, static, restrictive, but only vaguely creative. One drives the mechanism at any given time; the other keeps the drive from getting out of control.

It now seems to be growing clear that the real problem confronting the world is not a choice between private enterprise and socialism, but the necessity for developing ways to get a balance between private interests and social interests, taking care not to kill either and to keep both under restraint.

It is evident that these two elements—the personal and the social—are present in nearly all human affairs, and that either the stifling or the dominance of one at the expense of the other is almost—if not quite—equally bad. The real problem is how to get a proper relationship between the two.

It is this need for the establishment of a proper balance between forces which characterizes the whole of American business enterprise. Scientific management and its success as a business method may be measured, perhaps better than in any other way, by the skill and success with which it achieves balance in any given field; employer and employe, fatigue and rest, responsibility

(Please turn to page 43)

[1] Taylor Society, *Scientific Management in American Industry*, Harper & Brothers, New York, 1929, page 11.

The Problem of Labor Supply and Training

Technical Education and Defense

By A. A. POTTER
Dean of the Schools of Engineering, Purdue University, and Consultant,
United States Office of Education

CONGRESS has appropriated $75,500,000 for the fiscal year ending June 30, 1941 for defense training. This appropriation was made to the U. S. Office of Education, the regular government agency which is authorized by Congress to co-operate with state vocational boards in vocational education programs and which has also co-operated for many years with higher educational institutions of the country. Of the above appropriation $66,500,000 must be expended for vocational training of "less than college grade" and nine million dollars for training "on the engineering school level."

Vocational Training of Less Than College Level

For over twenty-three years the Federal Government has co-operated with the various states in the development of a nation-wide program of vocational education "of less than college grade." As a result of this there are available at present in this country more than a thousand public vocational schools, with a physical plant valued at more than one million dollars. The $66,500,000 mentioned will enable these vocational schools to train more than 500,000 people in skills of special value to the National Defense Program, most of these people coming from W.P.A. and unemployed groups, as well as from those employed on work projects of the National Youth Administration. Eight of the $66,500,000 available for vocational education is to be used for the purchase, rental or other acquisition of equipment for vocational schools, and ten million dollars to equalize opportunities for youth, especially youth in rural areas, to share opportunities for service in the National Defense Program.

Training on the Engineering School Level

To an extraordinary degree our national defense program, as well as our ability to meet industrial competition depends upon science and technology. There is already an acute shortage of technical and supervisory engineering talent in certain of the industries concerned with national defense as well as in the Army and Navy. The airplane industry reports a definite shortage in stress analysts, test engineers and airplane power plant designers as well as draftsmen. Thousands of additional engineers are needed who are competent as designers of tools, dies, jigs, templates as well as in part analysis, shop layout and estimates of labor and materials. Thousands of additional inspectors are needed by the Army, Navy and industry who have knowledge of materials, physical testing, inspection of foundry products for materials used in ordnance, x-ray inspection of welded parts, radiographic technique and other special problems. Inspectors are also needed for automotive equipment, explosives, and of radio equipment. Several hundred additional professional meteorologists are needed by the U. S. Weather Bureau and by the Army. The Maritime Commission, the Navy and the shipbuilding industry report substantial shortages in naval architects and marine engineers; that is particularly serious in that only three engineering schools (Massachusetts Institute of Technology, University of Michigan, and Webb Institute) offer programs of study in this field and graduated only fifty-one this year.

Besides the needs for thousands of additional engineering specialists industry is confronted with a shortage of industrial engineers and supervisors to speed up the production of equipment needed in national defense, engineers who are familiar with industrial organization, time and motion study techniques, production control, material handling and storage, inventory, budgetary and accounting control, industrial safety, personnel administration and industrial relations. Expanding production in some of the defense industries is being accomplished by dilution and overloading of the top management organization.

There are in this country about 165 institutions which offer instruction leading to degrees in engineering. Of

these 121 offer one or more curricula approved by the Engineers' Council for Professional Development.

The engineering schools of the country realize that they must maintain in the present emergency the strongest possible programs of undergraduate and graduate study and must increase their research efforts in order to insure a supply of competent and creative engineers. At the same time nearly all of these engineering schools, including the best known, have offered to the U. S. Office of Education, the regular government agency which has co-operated with higher education for many years, fullest co-operation in the training for national defense.

It is impractical to speed up the present undergraduate engineering programs of study, but an analysis of the U. S. Office of Education of the immediate needs for special training on the engineering school level and of the special facilities available at such institutions for training leads to the conclusion that engineering schools with special facilities should be utilized in one of the following ways:

1. Institutions which are located in large industrial centers, such as Pittsburgh, may be able to utilize their staff, equipment and classrooms for in-service training of special value in up-grading the supervisory and technical personnel of defense industries. This type of in-service training would be carried on mainly outside of working hours. In some cases industries may be interested in allowing some of the training to be given on company time.

2. Institutions which are not located in or near industrial centers may carry on certain types of in-service training on the engineering school level through extension classes. In such cases institutions may have to utilize classrooms and laboratories of public schools or of industry and have the instruction carried on by regular part-time teachers or by special teachers assigned to industrial centers.

3. Intensive resident programs of study, varying in duration from one to eight months. Most of such short-term courses should be available to those who have had the equivalent of at least the first three years of a recognized engineering school course and actual industrial or engineering experience but who lack specialized knowledge in the field in which there is now a shortage of engineers. Thus, the average mechanical engineer, through a twelve or sixteen weeks' course could be prepared for employment as a marine engineer, an aeronautical engineer or for production supervision, particularly if that engineer has had considerable practical experience. In the case of commissioned officers of the Army and Navy, intensive courses of one or two months may prove helpful to them in dealing with Diesel engines, high pressure steam plants, electric communication, cryptography, metallurgy, meteorology, chemistry of explosives or similar problems which have been developing very rapidly.

On October 9, 1940, Congress appropriated nine million dollars to the U. S. Office of Education to be used in reimbursing engineering schools, operating under charters which exempt their educational property from taxation, for the administration of the above types of in-service instruction as well as for special intensive courses in fields in which they have special facilities in staff and equipment.

Actual and potential needs for additional technical and supervisory personnel will determine the specific courses to be offered and every effort will be made to maintain a continuous balance between the supply of trainees and demands for their services. The first courses to be established will be designed to forestall potential shortages of inspectors of materials, chemicals, explosives, instruments, and power units; designers of machinery, equipment, tools and dies, and aircraft power plants, structures, and instruments; production engineers and supervisors; physical metallurgists; aeronautical specialists, marine engineers and naval architects. As other needs become apparent, additional courses will be added to this program.

Qualifications for enrollment will be determined by the institutions giving the courses in accordance with general rules suggested by the U. S. Office of Education. In most cases, students will be selected from those who have previously had some technical training or its equivalent in practical experience which must be refreshed or supplemented to fit them to perform specific technical or supervisory duties. The program will not conflict with the vocational training courses also being administered by the Office of Education through the several state boards for vocational education, nor will it displace regular undergraduate courses given by the co-operating colleges.

Institutions desiring to take part have already been invited to submit preliminary plans stating the need for trained technicians in their areas, the facilities and personnel they have available for giving the necessary courses, the number of students that can be taught, and the approximate cost of instruction. These purposes will be adjusted to a co-ordinated plan for the country

as a whole, after which authorization will be given to proceed with the enrollment of students.

Federal allotments to the participating colleges may be used to meet the costs of salaries, materials and supplies, reference books, the operation of buildings, the maintenance and repair of equipment and, to a limited extent, the purchase or rental of additional equipment and the leasing of space in non-college buildings. No expenditures are authorized for the purchase or construction of buildings, nor is provision made to defray the living expenses of students. Students will pay no tuition charges.

To determine training needs as they develop, the Office of Education has just completed arrangements under which selected colleges and universities have made available twenty-two regional advisers who will serve without compensation. Each of these will act, within his own territory, as a liaison officer maintaining continual contact with defense industries, Army and Navy district offices, employment services, and other sources of information on personnel needs, as well as with local engineering schools equipped to meet demands for training courses as they arise. These men will keep the Washington headquarters continually informed so that deficiencies in any one region may be met, if necessary, by training students in other places where facilities are available. In this way a national program will be evolved that will continually adjust itself to changing conditions both in industry and as regards the technical personnel requirements of the Federal Government. Authorization of course will not only conform to the needs so developed, but will also take into account the staff, equipment, and buildings at the various institutions and the availability of qualified students.

Detailed outlines of the ground to be covered in each in-service and intensive course on the engineering school level are now in preparation by the U. S. Office of Education. These outlines are intended to cover training programs of value to defense industries, the Army and Navy, and must in most cases be in line with Civil Service Commission requirements, as all civilian technical employment by government must have the approval of the Civil Service Commission. However, institutions are encouraged to adjust these outlines to students' preparation, their facilities and the needs of the region.

As the program develops arrangements will be made to facilitate the placement of students in defense positions as they complete their training. Much of this will be done by direct contacts between the engineering schools and nearby industries, but students will also have available the facilities of State and Federal employment offices and the U. S. Civil Service Commission.

An Advisory Committee on Engineering Training for National Defense which is representative of the engineering teaching profession, has been set up by the U. S. Office of Education to aid in formulating policies for the in-service and intensive training programs on the engineering school level. It is hoped that these programs will prove helpful to the National Defense Program by meeting the needs of the Army, Navy, and of defense industries.

Engineering colleges are greatly disturbed by reason of the selective draft, the call to active duty of the National Guard and Officers' Reserve, and by the present need of industry of additional engineering talent, and by the danger of the depletion of their teaching and research staffs. They are also experiencing great difficulty in finding additional teachers to take care of the defense training program. Engineering school executives are fully conscious of their responsibility to insure prompt preparedness and an adequate national defense program. They realize, however, that we must make certain that every person on our staff renders maximum usefulness during the present emergency, whether it be at his present post or in the direct service of government. In many cases superior teachers can render their greatest service through the training of engineers. It is hoped that industry as well as the defense agencies of government will realize that without effective teachers today there will be no engineers tomorrow to design and build instruments of war and to aid industry in meeting industrial competition which is bound to become more and more difficult. Industrial supremacy as well as military preparedness depends upon competent engineers and scientists.

No one can accurately predict what the future holds for us. Present conditions demand that science and technology operate at full speed. The engineer's initiative and inventive talents must be used most effectively. It is hoped that in-service and intensive training programs to be administered by the U. S. Office of Education on the engineering school level will prove helpful in supplying people for key positions in the rapidly expanding defense industries as well as for the Army and Navy. At the same time every effort must be made not to interrupt or to reduce the effectiveness of the engineering undergraduate and graduate programs of study and to increase our research efforts so that an adequate supply of well-educated and creative engineers may be assured.

Training Within Industry

By C. R. DOOLEY
Director, Training Within Industry, The Advisory Commission to the Council of National Defense

THE Training Within Industry program is a service to defense industries to assist them to meet their manpower needs by training within industry, each worker to make the fullest use of his best skill up to the maximum of his individual ability, thereby enabling production to keep pace with defense demands. This service renders specific advisory assistance to defense industries in setting up programs of instruction and upgrading production workers; of trades apprenticeship; and of training supervisors.

The development of highly skilled operators in a very short time is based on job analysis where each employe performs one or a few operations. By starting new employes on the simplest operations and by filling all jobs requiring higher skill by upgrading from below, fully 90 per cent of industrial training can be done right on the job where it is best done. New employes are thus producing while they learn.

For the development of all-round skilled tradesmen a three-to-five-year fully organized apprenticeship program is essential. Such a program provides a scheduled series of work assignments to cover adequately all the essential operations in a trade and a schedule of supplementary technical instruction.

The development of supervisors requires constant coaching on the job by an experienced supervisor and also organized discussion of policies and procedures and the principles of directing the work of others.

In all three of these phases of training a great deal of attention must be paid to the selection of employes to be trained. The ability to learn quickly is an essential quality sought for and may not always be found among all men who are out of work.

These training programs are carried on by companies within their own plants at their own expense. The availability of this service is being announced to defense contractors but is not compulsory. There is no authority to go into a plant on any basis other than at the request of the plant manager.

A method of rendering training assistance has been inaugurated through the services of experienced industrial personnel men borrowed from neighboring plants to help other plants on a part-time basis.

The United States has been divided into twenty-two districts with main offices in the following industrial centers: Boston, Hartford, Rochester, New York City, Newark, Philadelphia, Baltimore, Canton, North Carolina, Atlanta, Cincinnati, Pittsburgh, Cleveland, Detroit, Indianapolis, Chicago, St. Paul, St. Louis, Houston, Denver, Los Angeles, San Francisco and Seattle. All together there will be between 300 and 400 personnel-training men available on call.

In addition, each District Representative has the help and counsel of four advisers, two from Labor (one CIO and one AFL) and two from industrial management.

Accepted training practices in industry have been set down in bulletin form as guides for field representatives, individual companies and others who are interested. So far, there are nine such bulletins covering the following subjects, which may be had upon request:

1. The Training Within Industry Program.
2. Upgrading Within Industry.
3. Expediting Production through Training.
4. How to Prepare Instructors to Give Intensive Instruction.
5. Expediting the Training of Skilled Tradesmen.
6. Strengthening the Managerial Organization.
7. Expanding the Managerial Organization.
8. Improving Supervision.
9. Helping the Experienced Worker to Break in a New Man.

Early in the development of this service the need for training within industry as an inescapable responsibility was recognized. New industries such as aircraft were expanding rapidly and the number of persons with the skills necessary to man the shops of such companies did not exist. During the depression years industry as a whole had relied upon a vast pool of unemployed workers to meet the limited demand for additional workers and had discontinued their normal plant training programs. The increased labor requirements brought about by defense orders, therefore, found many companies with no training facilities and many had little or no knowledge of how to set them up and carry on a training program.

Soon after the appointment of the Advisory Commission to the Council of National Defense an Advisory Committee composed of representatives of management and labor was appointed and called to Washington in July of 1940 to study the problem of stimulating training activities within industry. Tentative organization plans and objectives were discussed and a plan was developed. The essence of the plan is that this service to be useful to industry must be carried on by representatives of industry in local areas under the direction of technically competent men with a knowledge of local conditions. Provision was made to render four general types of assistance:

Help in the analysis of training needs.

Aid in setting up a program with the plant to meet its needs.

Availability of the experience of other employers who have met similar problems, through clearance with headquarters at Washington.

Acquaint management with the availability of services of tax-supported Government agencies.

While the major part of the training and development of any employe takes place on his job, nevertheless the public vocational schools can and do play an important part through both pre-employment training and special training supplementary to their work after securing employment. A few examples will illustrate:—In Paterson, New Jersey, the head of the Vocational School and a representative of the Wright Aeronautical Company together planned the pre-employment course. It is four weeks, long—one week of blueprint reading, shop mathematics, use of measuring instruments, etc., and three weeks of shop work along specific operations similar to those on which each man is to be employed in the plant, provided he satisfactorily completes the course. The company furnished some of the machine tools and a few of the special instructors. In the first eight months of operation, some 1700 new employes were thus taken into the Wright Aeronautical plant and all but less than 100 are still there. A great many of these have been moved up the scale of job levels many times. Similar co-operation will be found in Buffalo with the Curtiss-Wright Company, in Hartford with Pratt and Whitney Company, in Williamsport with Lycoming and Piper Companies, in Los Angeles with Lockheed Company.

In Detroit, Cleveland, Pittsburgh and many other localities, the public vocational schools have co-operated splendidly with local industries in giving the kind of training which they wanted their employes to have.

The vocational schools have been criticized in some localities for not giving practical courses with the result that the men trained could not be employed. But in a great many locations the employers had not yet obtained contracts and as late as November 1940 many companies could not say what their definite requirements would be. So with the summer before them and idle school shops and school teachers available, the vocational schools did the best they could and at least succeeded in making the country "vocational conscious" and provided a reservoir of prospective employes with at least some general knowledge of machine-shop practice. Now as the needs of the employers are becoming more clearly defined, the pre-employment vocational training is becoming more specific.

The vocational schools are also serving by giving supplementary courses suited to various jobs to aid the workers in acquiring new skills and in accepting larger responsibilities.

While the final selection of employes rests with the employer, the United States and State Public Employment Service is locating suitable candidates both locally and from distant points. It is better for a local employer to trust its recruiting problem to the Employment Service than to conduct advertising in distant cities. The quality of this service is spotted of course, but is excellent in many places and is constantly improving. It deserves the support of the Public generally and the employers in particular.

The Governors can render important service by making sure that their State Employment Services are doing a good job.

Another Federal Agency which is being used throughout the United States is the Federal Committee on Apprenticeship the field representatives of which are tied in with the Training Within Industry program through membership on the panels on personnel-training men.

The work experience of young people employed on the projects of the NYA, the CCC, and the WPA should prove valuable to prospective employers. Every effort is being made by these agencies to place their employes in jobs for which their work experience fits them, with private industries.

A Case Study in Training[1]

By R. RANDALL IRWIN
Industrial Relations Director, Lockheed Aircraft Corporation and Vega Airplane Company
and
JACOB KADUSHIN
Assistant Education Manager, Lockheed Aircraft Corporation and Vega Airplane Company

WHEN the aircraft manufacturing industry was confronted with the huge national defense program, it already was working under pressure to meet the requirements of large foreign military orders.

During the three years from the summer of 1937 until the summer of 1940, aircraft manufacturing employment in Los Angeles county alone increased from 7400 to 45,000 persons. It would not be surprising if aircraft employment in Los Angeles county reached 150,000 persons by the beginning of 1942.

It has not been uncommon for an aircraft factory to double or even treble its working forces in three to five months. In the past, engineering personnel has increased in approximately the same proportion as other classes of employes.

Need for Specialized Training

Because aeronautical engineering is a comparatively new profession, there has never been a reserve supply of qualified personnel in this field. As it became evident that the industry could not secure experienced aeronautical engineering personnel, it was obvious that the only alternative was to train them.

The college graduate engineer, whether he majored in aeronautics or some other branch of engineering, cannot be considered as capable of solving design problems in an efficient and practical manner. While this condition applied in some degree to all branches of engineering, it is particularly true in the aeronautics industry.

The college graduate has absorbed a certain amount of fundamental theory. This theoretical knowledge must be supplemented by a thorough understanding of design standards, tooling problems, manufacturing methods, assembly methods and the various possibilities and limitations involved in the practical problems of efficiently designing and manufacturing a worth while product.

Besides this training in practical application of the theory he has already learned in college, there is imperative need for further training in some specialized field. To illustrate this need for specialized training let us consider the design of a fairly large modern aircraft.

The time for completing such a design is approximately 250,000 man-hours. If one man were to design the complete aircraft, on the basis of 300 working days per year and 8 hours of work per day, it would take him more than 100 years to complete the design. Even if a man undertaking such a task could guarantee living long enough to complete the work, we are hardly in a position to wait. It is quite evident, then, that the design of an aircraft must be undertaken by a large group of engineers.

As certain portions of the whole design are delegated to various individuals they become experts in solving those problems particular to that portion of the whole design. As new designs are undertaken, these engineers are again assigned to the same corresponding portions of the aircraft. Thus they become experts in their specialized field. To cope with the problem of increasing specialization, the college graduate needs additional training.

To meet the need for trained engineering personnel, the Lockheed Aircraft Corporation and Vega Airplane Company have three separate training programs. One is for men now employed in the engineering department; another for recent college graduates about to enter the industry, and the third for graduate engineers with experience in other industries.

In addition to these three programs arranged especially for engineering personnel, we have approximately 6000 employes attending evening trade extension classes in conjunction with the local school system. These classes are available to every employe in our organization to extend his knowledge and ability. They comprise 135 different classes and cover the various trades where skill and technical knowledge are essential. They

[1] This paper was also presented at the Annual Meeting of The American Society of Mechanical Engineers, New York, December 5, 1940.

are mentioned here because in many instances the college graduate finds himself deficient in the technical knowledge necessary for some phase of his work. He can acquire this knowledge by attending the particular trade extension class that meets his need.

Still another type of training program has been inaugurated to meet specific needs. Special courses have been developed to provide training, during working hours, of riveters, template men, loftsmen, tool planners, and inspectors. Since these courses have not, in most cases, been composed of college graduates, they will not be discussed at this time.

Training of Men Already Employed in Engineering Department

Of the three training programs for college graduates, we shall consider first the program for men already employed in the engineering department. The courses in this program consist of one to one and one-half hour lectures, given during working hours. These lectures are given by men recognized as authorities in their field. The students are selected from voluntary enrollers with the help of suggestion from their supervisors as to which course would most aid the student in becoming more adept in his work. Among the courses given are stress analysis, aerodynamics, materials and processes, assembly methods, fabrication methods, and so forth.

Training of Recent Engineering Graduates Without Industrial Experience

The second training program is that for recent college graduates; that is, graduates without any actual industrial experience. The men comprising this program are employed as engineering trainees. They are in a special department for the duration of their training. This is tentatively set at a period of one year. During this time they work in about twenty different departments in the plant, and thus acquire a thorough knowledge of the various methods and problems involved in the manufacture of aircraft. This work is augmented by several hours of lectures each week by outstanding engineers.

The supervisor of each department to which a trainee is assigned sees to it that he is given an opportunity to learn the various functions of the department, by moving him from job to job, as he masters the technique of each operation. The supervisor also reports to the co-ordinator of the program on each man's ability to learn, his interest in that particular type of work, his attitude, accuracy, speed, and so forth.

The trainee is required to keep a "diary" of his experience in the form of notes on the various operations he performs. He also is asked to make suggestions on possible improvements in the methods of manufacture and design that he has observed. These suggestions are written up with illustrative sketches and turned in with his "diary" to the co-ordinator. From the material turned in by the trainee and the reports of the supervisors, the co-ordinator can get a fairly clear idea of the type of engineering work for which the trainee will be best suited.

With this in mind, the co-ordinator arranges an informal interview between the trainee and the supervisor of the particular branch of engineering for which the trainee seems best fitted. During this interview, the trainee can obtain a clearer and more definite idea of the nature of the work in the department in which he is destined to find his permanent place. If his interests lie in that field, he can continue his training in a more concentrated manner. Also, in this informal manner, the engineering supervisor can meet and analyze his prospective employe, thus assuring a more equitable placement for the trainee.

Training of Engineering Graduates with Experience in other Industries

The third of our training programs is that for college graduates, who have had engineering experience in other industries. In view of the fact that this is the first time such a program has been attempted, considerable interest in our efforts has been aroused. For that reason, this program will be discussed in more detail.

Because the previous rapid expansion of the industry had already absorbed all available experienced aeronautical engineers, the sudden demand of the national defense program could only be met by additional training. To accomplish this training in the shortest possible time, there was evolved a plan for converting engineers experienced in other industries into aeronautical engineers. Because the trainees already would have a knowledge of engineering fundamentals, it would be necessary to cover only the special subjects peculiar to the aeronautics industry. Additional benefits from this procedure would be derived from the fact that the men would bring to the aircraft manufacturing industry experience in mass-production methods.

With these thoughts in mind, our companies developed a new intensive training program in conjunction with the California Institute of Technology. As soon

as preliminary arrangements were concluded, personnel interviewers were sent to various sections of the country to select carefully one hundred or more prospective trainees. More than sixteen hundred applicants were interviewed and given psychological and professional tests. Of these, one hundred and seventeen men were employed and sent to the California Institute of Technology at Pasadena, California. Their traveling expenses, tuition, and salary while in training were paid by the company. Under such conditions, engineers of exceptionally high qualifications cheerfully accepted our offers.

Courses Given at Caltech

The schedule consisted of eight weeks' training at California Institute of Technology, followed by eight weeks' instruction directed by the staff of the Lockheed-Vega Education Service.

The first portion of the program was completed on Sept. 20, 1940; during that time five courses of study were given at the California Institute of Technology. The first of these, aerodynamics of the airplane, was given with the assumption that the trainees were totally ignorant on the subject. Consequently, no one had any great difficulty following the course. All involved derivation of formulas were eliminated and the mathematics kept as simple as possible. To bring out practical application of the theories promulgated, problems given were based on the specifications of one of our current model commercial aircraft. The course consisted of 40 one-hour lectures supplemented by notes published by the California Institute of Technology faculty.

The second of these courses was aircraft materials and standards. While descriptive in nature, this course was given with considerable thoroughness. The lectures were augmented with numerous slides, photographs, trade catalogs, and samples. The Lockheed company furnished various castings, forgings, extruded sections, welded parts, rivet and spotweld samples, photographs of equipment, and other such items. The course consisted of 25 one-hour lectures with published notes.

The third course was the airplane and its components. It consisted of a general description of the various parts of a modern airplane and their nomenclature. The course, given informally, consisted of 15 one-hour lectures including general discussions. The smaller details were omitted in order that the whole airplane could be covered in the alloted time. Service manuals, blueprints, photographs, and similar material were furnished by the company.

The fourth course, airplane structures and stress analysis, began with the stresses and structures of the whole airplane. As long as it continued general in nature, the men had little difficulty with the mathematics involved. However, when the detailed stress-analysis portion of the course was entered into, about half the trainees experienced considerable difficulty in keeping up with the subject matter. This difficulty was caused by some of the trainees not having the required knowledge of mechanics and strength of materials.

This disparity of technical knowledge was not necessarily due to any difference in the abilities of the trainees. The fact that some of the men had been out of school for as long as ten to fifteen years, while others had been graduated only a few years previously was a strong contributing factor to this situation. To alleviate the difficulty occasioned by this variance in background, a test was given to determine which of the men needed the preliminary training. From the results of this test and some individual consultation, sufficient data were obtained for dividing the group into two classes; one class to continue with stress analysis, the other to concentrate their efforts on mechanics and strength of materials. The time allotted for this course was also 40 one-hour lectures. This included both the course as originally outlined and the subsequent divided classes. Published notes were furnished by the California Institute of Technology faculty.

The fifth course consisted of drafting for three hours daily during the afternoon for the eight-week period. The first several weeks were devoted to a review of academic descriptive geometry. One week was spent on technical sketching. The remainder of the time was devoted to drawing and designing detail aircraft parts. The Lockheed engineer assigned to supervising the trainees was invested with the responsibility of interpreting the company standards and conventions involved in this course.

Practical Training at Lockheed Factory

At the completion of the training at the California Institute of Technology, the second or practical phase of the training was begun at the Lockheed factory. At this time, an additional group from the Massachusetts Institute of Technology, comprising 21 men, was added to the group from California Institute of Technology. These men from Massachusetts Technical Institute were also graduate engineers who had majored in fields other than the aeronautical. However, for the most part, they

were fairly recent graduates and did not have any extensive practical experience. Their training at M.I.T. was of ten weeks' duration and consisted of the standard academic aeronautics course.

The program at Lockheed consisted of four one-hour lectures daily in the forenoon. These lectures were given by outstanding engineers who were considered the top men or authorities in their particular field. The lectures were of a practical nature, being more concerned with practical applications rather than involved theories. Among the courses given were sheet-metal fabrication, assembly methods, applied stress analysis, aircraft mechanisms, lofting, aircraft power-plant installation, wing design, fuselage design, castings and forgings, aircraft electrical design, and aircraft hydraulic systems. In addition, engineers outside the Lockheed organization who are connected with firms manufacturing supplies and accessories for aircraft were brought in for special lectures.

During the afternoon, the training consisted of actual design problems on the drafting board for a period of four weeks; liaison or contact work between engineers and the shop for two weeks; engineering checking of assembly and detail drawings for one week; and tool design and tool planning for one week.

The program at the factory was intended to bridge the gap existing between the theoretical knowledge obtained and the actual applicaton of that knowledge. Thus the transition from student to producing aeronautical engineer was accomplished with a minimum of waste effort.

The present emergency presents an unusual situation and unusual methods have been employed to meet it. No hard and fast program could be devised for all contingencies. As has been shown, college graduates, fresh out of school, present an entirely different problem from the college man who has been in industry for several years. Both these types of men can still further complicate the problem of further training by having some experience, very little experience, or no experience at all in the field for which they are being trained. With all these factors in mind, we have attempted so to conduct our training as to meet most effectively the various needs of these men.

In closing, it might be worth while to point out that institutions of higher learning, which are training engineers for industry, could help the present situation by revising their curricula along more practical lines. This possibility was suggested to us by the difference in the knowledge and ability of groups trained at Caltech and M.I.T. In the former, there was close co-operation between our organization and the university. Our education service and the engineer assigned to supervise the training kept in constant touch with the progress of the courses, making suggestions and furnishing material to bring the courses to a more practical level. The M.I.T. program, on the other hand, was not conducted in conjunction with any manufacturer. As a result, the material was more academic and theoretical, thus accounting for the discrepancy between the two groups.

The conclusion, therefore, is that the more practical the training for college men, especially on the higher levels, the more valuable it will be to the men themselves, to the industry in which they are to work, and to our national defense for which the demand is urgent and immediate.

Discussion

By W. B. STEPHENS
Co-ordinator and Director of Training, United States Civil Service Commission

I AM sure that the rest of you share my feeling as we come to the conclusion of the excellent presentations to which we have listened this morning.

I shall take but a very few minutes in order to comment briefly upon the situation which has brought about the programs which you have heard described.

Several months ago the United States Civil Service Commission was requested by Mr. William H. McReynolds, Administrative Assistant to the President, to undertake a survey of the personnel needs and training facilities of the defense agencies of the Federal Government. Soon after this survey was started a question was raised concerning the availability of an adequate number of machinists to meet the needs of the defense program. A special study was made of this problem and various sources of information both as to needs and as to supply were explored. As late as July or even August, there was a considerable difference of opinion among persons in responsible positions with respect to the probability that a serious shortage of all-round ma-

chinists would develop. The conclusion drawn from the survey, however, pointed strongly to the fact that in less than two years the War and Navy Departments would find it impossible to obtain skilled all-round machinists in the numbers necessary to fill their needs, even if they should be fortunate enough to share the supply of machinists equally with industry.

The discussion that was carried on about machinists in connection with this study illustrated the unwillingness of many people to believe in midsummer that the defense program would exhaust or nearly exhaust the supply of skilled labor in many categories. The rapidity with which the situation has changed and the degree to which the probability of shortages has crystallized into actuality is illustrated by a progress report published as of November 1 by the Bureau of Labor Statistics. This report covers 379 different occupations. They are graded first with respect to supply and second with respect to the length of time required for training. The grades under each category are expressed in the letters A, B, C and D.

Under the supply and demand heading, Grade A indicates those occupations in which serious shortages are anticipated in the immediate future; Grade B, those occupations in which shortages may develop in the next twelve months under the current defense program; Grade C, those in which shortages may develop with a continued expansion of the rearmament program after the next twelve months; and Grade D, those having a relatively large reservoir of unemployed workers but that may, through continued expansion of the rearmament program, readjustment of production techniques, and losses through conscription, develop shortages within the next two years.

On the basis of the time required in the training processes, occupations were graded as follows: Grade A, more than two years' training; Grade B, between one and two years' training; Grade C, between six months and one year's training; and Grade D, less than six months' training.

The November progress report indicates that 278 of the 379 occupations reported fall into Grade A with respect to supply and demand; that is, in these occupations serious shortages are anticipated in the immediate future. 23 occupations were in Grade B, 29 in Grade C and 49 in Grade D.

Of the 379 occupations reported it was estimated that 105 required more than two years of training, 89 between one and two years, 116 between six months and one year, and the balance, 69, less than six months.

Of the 278 occupations in which it is anticipated that serious shortages will develop in the immediate future, 85 fall in the category requiring more than two years of training, 60 would require between one and two years, 89 between six months and one year, and 44 less than six months.

The 379 occupations reported are among the most important to the defense program. It is anticipated, however, that as the survey continues other essential occupations will also be included among those in which shortages may be anticipated. The tremendous importance, therefore, of the programs of training which you have heard described this morning cannot be overemphasized. When industry and the agencies of Government are confronted with actual or impending shortages of persons adequately trained and experienced in the work essential to carrying out the defense program as it has been planned, the only answer is the establishment of the most efficient types of special training programs which can be devised to meet the needs of industry and Government.

There are some fields of work and there are levels of experience in which it will be impossible to provide by any sort of practical intensive training programs key personnel that will be required in carrying out the defense program. The training of engineers and other technical personnel that has been described by Dean Potter is designed to prepare persons who are competent to assume responsibilities at what may be termed the junior level. It is not expected that many seasoned and experienced persons who are qualified for positions of high responsibility will be produced by this program any more than it is expected that a great number of skilled mechanics can be turned out at the journeyman level by the defense vocational education program. In order, therefore, that the supply of experienced technical and specialized persons throughout the country may be available for use in connection with the development of the defense program, the Civil Service Commission and the National Resources Planning Board have jointly undertaken the establishment of a National Roster of Scientific and Specialized Personnel. President Leonard Carmichael of Tufts College is Director of the project, and the Executive Officer is James C. O'Brien of the Civil Service Commission.

The Roster[1] was planned to make available in one central office an index of all American citizens who have special scientific or professional skills which may be of

[1] Statements concerning the Roster are quoted excerpts from its publications.

importance to the nation in periods of emergency and in normal times. A similar roster has been used effectively in England and doubtless similar catalogs are also available in the totalitarian nations. Co-operating in the development of the project are the National Research Council, the Social Science Research Council, the American Council of Learned Societies, and the American Council on Education which include as constituent members many of the largest scientific, technological, and professional societies. Through these societies are being made available to the Roster mailing lists and other information concerning the location of members of these organizations. Every effort is being made to secure from whatever sources possible the names and addresses of highly trained individuals who have not affiliated themselves with professional organizations or societies. From these individuals there is being secured information concerning geographical location, age, sex, training, et cetera, and also information intended to cover in detail their own specialized fields. To elicit this information a general questionnaire was devised, and provision was made for transmitting to individuals in varying specialized fields a Technical Check List consisting of a carefully prepared and detailed breakdown of the diverse operations and functions within their particular scientific or specialized fields.

The register itself is planned as a card index punched with the appropriate information concerning each individual registered. It is being set up in such a way as to produce any pattern of desired information with a minimum of delay. It is recognized, however, that the selection process cannot be reduced to a mechanical card-sorting procedure, and special committees of experts in each of the specialized fields are to be asked in certain instances to evaluate the records of individuals whose names are segregated by the automatic process of the punch-card technique. These special committees are also to be charged with the duty of protecting present educational and research endeavors which are performing important public services to the maximum degree possible. Fundamentally, the aim of the Roster is the development of a means for the efficient and rapid but appropriate use of the specialized brains of America in the service of the nation.

There is one undercurrent of great significance which can be traced through all of the addresses to which we have listened this morning. It is the outgrowth of the challenge presented by a period of national emergency of such tremendous proportions as that which faces us at this time. Normal methods of operation, usual time limits, and ordinary methods of training have all had to be re-examined in the light of the time limitations and other factors which are peculiar to this emergency. We have heard mention several times during this conference of the search for "the one best way" of doing any particular job. There is sometimes a danger that once a "one best way" has been found for the doing of any particular piece of work under a particular set of conditions, that way is continued unaltered even though something in the conditions may change. Even in normal times there is a tendency, once a way of performing an operation has been determined after careful analysis and study, to continue the method without re-examining from time to time all the factors which led to its adoption in order to discover whether any significant change has occurred in any one or in any combination of them that would justify or demand another analysis and possibly the adoption of new or changed methods. At a time of national stress and strain, it is vitally important that we question all of those methods and operations which hitherto, under the conditions that have prevailed in the last decade, we have accepted as being "the best ways" of manufacturing and maintaining equipment and of training personnel. We have been given evidence this morning that such a re-examination of methods and procedures is being carried forward under the most able leadership. It is heartening to realize this, and it is essential that the excellent work which has been started should be vigorously and intelligently prosecuted in order that the crisis this nation is facing may be met efficiently and adequately.

Note

This issue includes the papers that were presented at the Annual Conference of The Society for the Advancement of Management, December, 1940, with the exception of the session on "Protective Labor Legislation—Boon or Bane in a Defense Economy?" Papers presented at this session will be published in the next issue and they include "Labor Standards and Regulation—An Appraisal," by V. A. Zimmer, "Government's Role in Collective Bargaining," by Otto Beyer, "Labor Regulation as Industrialists See It," by E. S. Cowdrick, and Discussion by Marshall E. Dimock.

Scientific Management in Distribution

(Continued from page 31)

and authority, planning and control, production and market.

In the case of marketing the forces to be balanced are not all "within the walls." Perhaps the most important point of all is to balance production itself with consumption itself. Of these two major factors in the marketing task the first—production—is mainly internal or personal, the second—consumption—is outside in the market, largely a social problem. This is what makes marketing in many respects a social, rather than a purely mechanical task.

It is the function of marketing to give people what they want when, as and where, they want it. Hence, keeping sensitive to changing ideas, shifts in demand, modifications of taste, new concepts about products is not merely a desirable feature of marketing, it is essentially the most important task which this phase of business has to perform. The new conditions of society impose on business the necessity for developing an effective technique for keeping itself more intelligently responsive to consumption and its variations.

If this can be done, it will be more effective than the interposition of any governmental planning activity ever could be. In other words, it may be asserted with confidence that no form of planned economy can be successful in making life more agreeable if it does not keep production sensitive to changes in demand; and it now seems evident that this sensitiveness can be preserved better by swift individual action than by any such slow and ponderous means as superimposed bureaucratized planning.

If this is true, we must conclude that an essential feature of a properly operated business supplying human wants is the deliberate and painstaking cultivation of a technique for keeping sensitive to the public will.

And in the performance of this most essential group of functions there never has been devised a better formula than that represented by scientific management which calls for the establishment of facts, the setting of standards, the maintenance of standards and the balancing of conflicting interests.

Note

Two articles in this series—"Increased Production for Defense Needs," by Sanford E. Thompson and "Scientific Management in Government Operations," by George D. Babcock—were published in the October-December, 1940, issue.

REVIEWS

Stabilizing Jobs and Wages. By Herman Feldman, Harper & Brothers, New York, 1940, pages xv, 334. ($3.50.)

Reviewed by JAY C. HORMEL, *President, Geo. A. Hormel & Co.*

Without question, Mr. Feldman's book "Stabilizing Jobs and Wages," is the most comprehensive study yet published on the subject of employment regularization. The author has outlined every important device or technique for gaining regularity of employment in the face of fluctuating business volume, and for maintaining relative regularity of income to workers whose actual employment fluctuates.

No employer can thoughtfully read Mr. Feldman's book without finding therein some suggestion for improving the employment practices in his own shop, and the employer who is interested in availing himself of the overhead economy or the increased labor efficiency, or the tax saving which comes from employment regularization, might hope to find Mr. Feldman's book pointing the way directly to the solutions of his various problems.

Although the writer points out that irregularity of income is a much more important source of pauperism than low wages, he has not dwelt at length upon the social and economic gains to be accomplished by an increase in the regularity of income. Although this book does an outstanding job of pointing out the methods, devices and practices which may regularize employment and income, there is as yet no work demonstrating the broad values of progress in these directions, which values this author takes for granted and which he apparently assumes are demonstrable, and which it may be hoped he will demonstrate in any revision or in any sequel to his present book.

How to Train Supervisors. By R. O. Beckman, Harper & Brothers, New York and London, 1940, pages xii, 305. ($3.00.)

Reviewed by JEAN L. SHEPARD, *Director of Executive Personnel, Lord & Taylor, New York.*

One always picks up a book on Industrial Training a little wearily. Training has an unpleasant academic sound to the average practical business man. Teachers carrying into industry the old academic, didactic viewpoint with some of its worst

and most ineffectual features, have proved inadequate. Perhaps if Mr. Beckman's title had indicated what his book actually presents—that is, how to develop leaders in business—it would more quickly catch the eye of the harrassed industrial executive who is anxiously groping for a solution to his ever-increasing problem of management.

The first part of *How to Train Supervisors* is a logical and convincing exposition of the development aspects of training, and the importance of developing those qualities of leadership in supervisors, whether of little or great authority, which will enable them in turn to get from the workers under them a more efficient performance. In other words, the real training job in any organization must be done by the supervisors of that organization, and it must be done on the job in the daily contacts between supervisor and worker.

Mr. Beckman's method of training is the discussion method, perhaps the most difficult and yet undoubtedly the most effective of all teaching techniques. To me the most valuable part of the book is the careful and painstaking exposition of the technique of conducting a discussion: preparation, choice of subjects, presentation, means of control, timing, use of charts, shaping of a conclusion.

The second part of the book is a series of specimen discussions. The first few I read with interest, but I must confess that I found myself skipping many of the ensuing ones and catching only a paragraph here and there. The specimens lost much of the spontaneity which must have been present in the original discussions. They are like the sales demonstrations one sees, which fall so disappointingly flat because they never catch the lilt and play of the real situation. One is inclined to like to work out things his own way, once he has the basic idea, and not have words put in his mouth; and least of all does he like to follow slavishly directions which say, "At this point you should bring in a bit of humor."

While the book is pertinent and valuable for personnel workers, it is inclined to be tedious for the average business man.

Life Planning and Building. By Harry Newton Clarke. Edited by Jessie B. Adams. International Textbook Company, Scranton, Pennsylvania, 1940, pages xi, 251.

Reviewed by ERWIN H. SCHELL, *Massachusetts Institute of Technology.*

Here is a book with an engaging quality of directness for as its foreword indicates, it is written specifically to assist "senior high school and college . . . students in the solution of their problems of planning for life." Despite the normal temptation to lay down wise saws and to reflect a personal philosophy, the text hews to the line and confines itself to simple instructions and practical procedures based upon concepts whose validity is at once clear.

Chapter sequence follows the natural chronology of problems confronting young people in their search for a satisfying vocational outlet. Beginning with a discussion of the purpose of work and the main areas for such activity, the subject matter swings to the inventory and analysis of personal interests and traits; the exploring of likely fields of opportunity; the finding of the first job with its inevitable adjustments and the earning of advancement. Auxiliary chapters dealing with the intelligent use of money, the balanced use of time and the cultivating of pride of work complete the text. Questions and a list of suggested reading at the close of each chapter, give the volume an immediate usefulness as a teaching tool. A discriminating bibliography and appendix conclude the treatment.

In order to free the presentation from theoretical color, the style adopted is simple and informal, much of the text being couched in the second person. Plentiful examples illustrating the methods recommended further serve to provide validity and authenticity.

If the message of the book were to be summed in a word, it is that analytical study of past and present activities and interests throws light upon future potentialities. This is good doctrine particularly when tested methods for its application are sympathetically presented in a form that young people can understand and apply.

City Manager Government in the United States. By Harold A. Stone, Don K. Price and Kathryn H. Stone, Public Administration Service, Chicago, 1940, pages xv, 279. ($2.50.)

Reviewed by EARL DE LONG, *Department of Political Science, Northwestern University, Evanston, Illinois.*

The institution of city manager government in the United States is not more than thirty years old. This volume presents the results of an inquiry into the origin, motivation, experience and contribution of this institution. The inquiry was undertaken under the sponsorship of the Committee on Public Administration of the Social Science Research Council and under the direction of the authors. They personally studied city manager government in eighteen cities and published a partial report on these cases in a companion volume, *City Manager Government in Nine Cities.* They inspired similar case studies by others in thirty-two other cities, a selective report on which is given in another companion volume, *City Manager Government in Seven Cities.*

These fifty cities were chosen to be a representative sample of city manager government in the United States. The survey did not attempt quantitative comparisons of governmental or administrative results between cities or within cities. The survey of each case city is an independent qualitative comparison of experiences before and after the advent of city manager government. The volume in review here is the synthesis and analysis of these fifty cases. It gives fifty pages to the development of city manager government, one hundred nine pages to administration in city manager cities, and ninety-two pages to politics in city manager cities.

The book is not an important contribution to the literature of management as such. The chapters on administration are written to show by descriptive illustration that management has improved in the cities studied after the adoption of the manager plan. The respects are specified in some detail—organization, administrative planning, personnel, financial administration, coordination—but there is no appraisal of the administrative experience of city manager cities against ideal standards.

The more important contribution of the volume is its discussion of the conditions of political environment in which mu-

nicipal management has advanced. In city after city the overeagerness of the instigators of manager government for improvement in administrative methods has required moderation and adjustment to the political pace of the community. In general, only in the smaller cities has experience borne out the theorists of manager government who have visualized the manager as the anonymous agent to administer well those things which the city council decided to have done. In the larger cities good administration has not been a sufficient salesman alone and the greater success has come where managers have abandoned anonymity and mere administrative agency, have assumed public leadership on matters of municipal policy, and have introduced better management methods behind the protection of popular approval of the policies undertaken. Manager government may be deemed successful not alone for administrative improvement but perhaps more because it is giving more effective means to record and formulate the wishes of the community in matters of local government.

Controllership: Its Functions and Technique. By John H. MacDonald, Controllers Institute of America, New York, 1940, pages x, 134. ($2.00.)

Reviewed by OTTO F. TAYLOR, *Certified Public Accountant, New York.*

During the past few years much has been written and said about accounting principles, organization and technique. Among the subjects emphasized in the course of this discussion has been the place of the controller in business (particularly big business) organization.

Until recently the "comptroller" was a public official whose duties were prescribed by statute. In business, the designation was rare. The head bookkeeper, chief clerk, office manager, or chief accountant, although often a person of consequence, was subordinate to the officers. As relationships both within the structure itself and between the corporation and other bodies became more complicated, the clerk of former times evolved into one of the principal officers and was designated first as comptroller and more recently as controller.

The principal source of information on the subject has been the publications of the Controllers Institute of America, including papers presented at their meetings and articles in their monthly magazine "The Controller." The book under review is largely a compilation of this material. As the president of the institute says in his preface, it is the work of the institute, whose directors designated one of their number to prepare it.

The scope of the work may be judged by the section headings:

I. WHAT IS CONTROLLERSHIP?
II. FUNCTIONS OF THE CONTROLLER
III. RELATIONS WITH PUBLIC ACCOUNTANTS
IV. RELATIONS WITH GOVERNMENT
V. RELATION TO POLICIES AND MANAGEMENT
VI. CONTROLLERS' REPORTS

The subject matter is well arranged and is followed by a comprehensive index.

The controllership function in management is of growing importance and the Controllers Institute has performed a genuine service by making the best material on the subject readily available.

Politics and Public Service: A Discussion of the Civic Art in America. By Leonard D. White and T. V. Smith, Harper & Brothers, New York, pages xii, 361. ($3.00.)

Reviewed by CHARLES S. ASCHER, *Secretary, Committee on Public Administration, Social Science Research Council, New York.*

A Congressman from Illinois (a Democrat from Texas) and a former United States Civil Service Commissioner (a Republican from Massachusetts) engage in Socratic dialogue on the shore of a Wisconsin lake. Their first clash of minds drives each of them to put some ideas on paper: they meet again to discuss what they have written. In this unusual and engaging framework are put forth some provocative thoughts, for these are no ordinary politician and bureaucrat: they are both professors at the University of Chicago, the one editor of the *International Journal of Ethics,* the other a leading authority on public personnel administration. And one who knows both can testify that the printed page has caught the flavor of their personalities.

Modern technology has changed the services that we demand of government, and an art of public administration is rising level with scientific management in the industry which has so influenced government. Yet our party system makes its century-old demand for patronage. In this interesting discussion it is White who concedes the need for the party, it is Smith who argues that the enlightened politician would gladly dispense with most patronage; and together they stake out the legitimate role of politician and public servant. The chapter on Readjustment is particularly shrewd in appraising forces at work in society which are changing the old pattern. It would be unfair to make a lifeless summary of "T.V.'s" lyric apotheosis of the politician as the broker in ideas, the lubricant compromiser, essential for the peaceful adjustment of sincerely clashing interests; or to abridge within the scope of a review White's authoritative presentation of the case for the public service to be allowed to do for society what it is well equipped to do, given the chance.

The book will interest readers of Advanced Management both as citizens and as students of administration: it is refreshing and stimulating—a contribution to the civic art.

Technology and Labor, A Study of the Human Problems of Labor Saving. By Elliott Dunlap Smith in collaboration with Richmond Carter Nyman, Yale University Press, New Haven, pages xiv, 222. ($2.50.)

Reviewed by F. J. ROETHLISBERGER, *Associate Professor of Industrial Research, Harvard Graduate School of Business Administration, Boston.*

This book reports the results obtained from case studies of the "stretch-out" or "extended labor" system in eighteen cotton mills. What the study demonstrates clearly is that labor-saving installations in the instances studied were successful in the long run only in those mills where the dual objective had been achieved, first, of more efficient manufacturing and, second, of

upholding and preserving morale. With but one exception, all the mills which were finally successful in increasing technical efficiency were also successful from a human relations point of view. Serious strikes occurred in those mills where the chief aim of the labor-saving installation was to reduce operating cost without also taking into account and handling intelligently the social implications of the change.

From the practices and experiences of the "successful" and the "unsuccessful" mills the author makes certain generalizations with regard to those factors of which account must be taken when making labor-saving installations. Although they refer specifically to the "multiple loom" system in the cotton weaving industry, the author's generalizations throw considerable light on the social consequences to industrial organization of technical innovation. What interested the reviewer most was the interdependence of factors involved in the problem of labor-saving. The rate at which a labor-saving installation can be introduced is, of course, an important consideration. This rate varies in different organizations and is dependent upon the technical and social organization of the mill: upon the existing relation between employes and management, as well as upon the stage of development reached by the operating executives in the new technical methods required of them under the new system of production. As the author puts it, "Increased loom assignments require fewer loom stops. Fewer loom stops require better yarn, etc., etc." Increased loom assignments, however, not only require a better understanding of the improved materials and technical conditions of work upon which enlarged assignments are based; they also require an understanding of the social conditions of work—the human situation—upon which ultimately the effective co-operation of the individuals to the technical end sought is based.

It is unfortunate that the author was not able to present more fully and specifically the original data on which his generalizations are based. The published book suggests the vast wealth of material that was collected and which would provide invaluable source material for the student interested in the problem of how technical innovations can be introduced without at the same time disrupting the social foundations on which effective co-operation is based.

A Primer of Time Study. By F. M. Shumard, McGraw-Hill Book Company, Inc., New York and London, 1940, pages xii, 519. ($5.00.)

Reviewed by ROBERT LEE MORROW, *Consulting Engineer and Lecturer, New York University, New York.*

This book is, in my opinion, more than a "primer." It gives a comprehensive coverage of time study and includes a wealth of practical examples and problems, of particular value to the student of time study. It is written in simple language, readily understandable by the "layman"—a feature not always found in present-day books on specialized subjects. In its various chapters, it covers the actual taking of time studies, the rating of operators, breakdown of cycles into elements, computation of studies on hand operations, automatic machine operations, and the analysis of idle time, attention time, interference on machine operations, rest factors for fatigue, the application of standards, premium plans, and standardization of time study data.

There are, however, a few points on which I cannot agree with the author.

He recommends not recording delays, foreign elements, and movements "not to be considered as official." In any engineering analysis such as time study a complete record of all time is essential, whether included in the final standard or not.

Further, the author states that "two experienced time study men should come within 7 per cent of each other's ratings." It is true, that when the observer has had experience judging many operators on similar work, when the operator's effort is not too much below normal, reasonable accuracy may be obtained.

However, there is no scientific basis for any rating method based on judgment alone.[1]

Taylor's method of "rating" consisted of studying how each of several skilled workmen made each elementary movement and selecting the quickest and best method of making each movement. These actual element times with allowances then become the basis for operation standards or allowed times.

More recently, Carroll and others, have used time standards based on element standards. By the use of charts and tables as a basis for building standards, errors of rating and other variations are largely eliminated.

Using somewhat similar methods, I have found from actual practice that the need for rating occurs less frequently, but if rating is necessary, possible errors are lessened by the use of these methods.

Another method suggested by Holmes, but not as yet developed to a practical basis, is to build standards from time of body movement charts.

In Chapter 13 "rest factors" are covered by allowances of from 8 to 20%, including personal allowances, with the suggestion that when the nature of the work indicates a higher percentage, detailed studies be made to determine the allowances needed. It is not clear that this percentage covers unforeseen unavoidable delays, interruptions, minor accidents and other variations, which must be allowed for. Fatigue alone is often a small item and can be measured by comparing studies taken during different periods of the day.

On the whole, I find that "A Primer of Time Study" is comprehensive and practical, a sound book, and one which should prove highly useful to beginners in this subject.

How to Supervise People. By Alfred M. Cooper, McGraw-Hill Book Company, Inc., New York and London, 1941, pages vii, 150. ($1.75.)

Reviewed by EVELYN BUCKLEY, *Executive Secretary, The Society for the Advancement of Management.*

The acceleration of problems of supervision arising out of the additional activity in connection with national defense is reflected in the publication of numerous new offerings in the literature of supervision.

The effort under consideration does not add anything to what has already been written and seems to be designed primarily for the worker who is undergoing his first experience as a supervisor or who is aiming for a promotion to a supervisory position. It is written simply and contains the usual hints on lead-

[1] SAM has a committee on Standardizing Rating of Time Studies which is studying this problem. For information write to the Chairman, Mr. J. M. Juran, Western Electric Company, New York.

ership, how to develop group morale, hiring, reprimanding, firing, and teaching.

Even though this book does not add anything to the general knowledge in the field, it can still be highly useful when placed in the hands of persons who have no previous acquaintance with the subject. And its simplicity and brevity might recommend it for those who would be frightened away by something more profound.

Training Your Employees, Suggestions to Executives and Supervisors. By Milton Hall, Pamphlet No. 3, Society for Personnel Administration, Washington, D. C., October, 1940, pages 26. ($.35.)

Reviewed by EVELYN BUCKLEY.

Anybody who wants a quick look at the whole field of the present problem of emergency training will find that Mr. Hall has done a remarkable job and has set forth the important principles with particular cogency and accuracy.

Industrial Management. By Richard H. Lansburgh and William R. Spriegel, John Wiley & Sons, Inc., New York and London, 1940, pages xi, 666. ($4.50.)

Reviewed by C. L. JAMISON, *Professor of Business Policy, University of Michigan.*

Through two editions Lansburgh's "Industrial Management" has presented with simplicity and clarity the underlying principles of an art that is difficult to teach even with the aid of simple language and easily understood examples. It is gratifying to note that Professor Spriegel's revision has preserved the admirable qualities of the earlier editions. Changes have not been made where changes were not necessary.

Enlargement of the text has been effected by adding ideas that have been introduced into the field of management since the previous revision twelve years ago. For example, a clear distinction between administration and management is but one of many more recent contributions to an understanding of the complexities of the subject.

While the impetus to improved management growing out of the exigencies of the first world war largely influenced the thinking of the original author, events in the past dozen years have somewhat obscured the war influences—the great depression, the experimentation of the New Deal, and the increasing dominance of labor. While Professor Spriegel does not ignore the war as an episode of historic importance to management, he has had to subordinate it to secondary position in the light of more recent developments.

The revision of the book is vitalized by the fact that Professor Spriegel is himself an experienced industrialist. Throughout the book he has added illustrations and comments growing out of his own experience. Noticeable contributions of this nature are found in the chapters on plant layout, inspection, budgetary control, purchasing and production control. Time and motion studies also are treated more completely than in the earlier editions. There have been many technological improvements since 1928 in material handling, factory lighting, air conditioning, and accident prevention devices, which call for explanation and later photographic illustrations.

Where necessary entirely new chapters are introduced, as, for example, a chapter on product development and research and one on development of processes and materials. The transfer of skill from men to machines has been accelerated greatly with increased labor costs. The revision gives due consideration to these changes and supplies a more adequate treatment than that of the earlier editions covering equipment and tools and their control. New conditions in labor relations growing out of the National Labor Relations Act have necessitated the inclusion of considerable additional material. The subject of governmental influences in management is covered in a brief chapter at the end of the book. The bibliography also has been brought up to date.

The revision has dropped only a little of the original material and has added about 130 pages of material that is new.

Statistical Method from the Viewpoint of Quality Control. By Walter A. Shewhart, The Graduate School, Department of Agriculture, Washington, D. C., pages ix, 155.

Reviewed by JOHN E. BLACK, *Factory Manager, Bendix Radio Corporation.*

This book discusses some seldom considered aspects of quality control. It discusses briefly the history of quality control, and in considerable detail statistical control, establishing limits of variability based on statistical control, presentation and interpretation of results and the meaning and difference between accuracy and precision.

The author is undoubtedly the leading authority in this field but the book will appeal more to students than to the men who are supervising and administering inspection. There are many sound ideas regarding inspection that should be given more consideration generally, but on the whole the language and examples are so abstract that the book will not be used generally even by those who would like to employ this technique. If there were more specific examples of actual inspection problems, the book would be of greater value in introducing the concepts of statistical control. The subject matter is important, but the presentation is not appealing because it is difficult to tie up the abstract statements of the formal mathematical problems with everyday inspection. Most inspection departments are administered by intelligent technical men but not by highly skilled mathematicians. If the principles of statistical control are to have any general usage, an appeal must be made to these men.

Public Management in the New Democracy. Edited by Fritz Morstein Marx, Harper & Brothers, New York and London, 1940, pages ix, 266. ($3.00.)

Reviewed by GEORGE C. S. BENSON, *Director, Curriculum in Public Administration, University of Michigan.*

This volume contains fifteen articles on various aspects of public administration by some very competent persons. Like most such intellectual shotguns, there is no common focus except the title. Accordingly, it will be necessary to review the articles briefly and individually.

Max Lerner of Williams College discourses on "The Burden of Government Business" in fairly provocative generalizations. His theme is that administrative services must develop to help with the organic problems of our society and culture. Unfortunately he does not have time to say how this is to be done. Maurice P. Davidson, Trustee of the New York State Power Authority, is a little more specific in his "The Citizen and the Service" where he outlines a few instances in which governmental agencies have gone to some trouble to secure the cooperation of the governed. Phillips Bradley of Queens College discusses several phases of local administration as a "convenient testing ground for administrative advance" and finds it improving.

The next essays are devoted to "Essentials of Public Management," in contrast to the "Foundations" discussed by the first three. David Cushman Coyle, who needs no identification, writes on "Information." His special interest is the securing of information for the President, especially by his pet governmental agency, the National Resources Planning Board, about which he writes realistically and well. Warner W. Stockberger of the Department of Agriculture follows with an essay on "Leadership" which is a brief but good discussion of planning, organization, and co-ordination. John Pearson, New England Regional Director for the Social Security Board, writes interestingly and informatively about securing "Teamwork" in administration. H. A. Hopf under the heading "Administrative Co-ordination" reviews several phases of administrative organizational structure as he thinks government might take them over from business. While admittedly hasty, his analysis perhaps contains more real suggestions for administrators to ponder over than do the rest of the essays. It is substantially the same as his article in the April-June, 1940, issue of ADVANCED MANAGEMENT.

Part III is devoted to Recruitment for the Public Service. Arnold Brecht, former *Ministerialdirektor* in the German Civil Service, has a clear-cut, though brief appraisal of the "Relevance of Foreign Experience," marred only by slight failures to understand the situation here fully. Charles P. Messick of the New Jersey Civil Service Commission writes generally and hopefully on "Conditions of Reform in the United States." Samuel H. Ordway, Jr., of the National Civil Service Reform League has a good essay on "Problems of Selection" in which he analyzes such technical problems as the unassembled examination dogmatically but rather effectively. Enno Hobbing, former President of the Harvard Guardian has a good essay on what contemporary excesses of veterans' preference mean against "Youth and the Public Service."

A final Part on "Conditions of Public Employment" begins with an intelligent, generalized brief for "The Rank and File" by Jacob Baker, President of the United Federal Workers of America (C.I.O.). Luther C. Steward, President of the National Federation of Federal Employees (now unaffiliated), gives some interesting history in his "Civil Service Unionism: A Case in Point." Wallace C. Sayre, Civil Service Commissioner of New York City, discusses "Political Neutrality" with a very forcefully put attack against those provisions of the Hatch Act and similar acts which bar civil servants from political activity unrelated to their official work. Fritz Morstein Marx of Queens College concludes the volume with an essay on "Administrative Responsibility" which contains a number of judicious and penetrating comments mostly on legislative and judicial responsibility.

Although intended, one must suppose, for the general reader, the volume has too much duplication and is too unsystematic for that purpose. Individual essays, however, do contain thoughtful points which make it a desirable addition to the specialist's library. The quality of the editing is high, for the contributions read well throughout.

Wartime Control of Prices. By Charles O. Hardy, The Brookings Institution, Washington, D. C., 1940, pages x, 216. ($1.00.)

Reviewed by N. I. STONE, *Consulting Economist.*

The book is devoted to a study of the causes of wartime price inflation and the methods of price control developed in the last war. After analyzing many factors which cause specific price increases, the author points out two outstanding causes leading to a rise in the general wartime price level: (1) competitive bidding for labor by employers; (2) monetary inflation produced by expansion of bank credit not only to finance private enterprise, but, as was the case in the World War, to finance the issue of government bonds.

As an alternative he advocates the financing of the war to the greatest possible extent through taxes. He believes that the bulk of the funds required to prosecute the war could be raised from current income, but realizes that in the present state of public opinion loans are unavoidable. However, in order to avoid price inflation such as was caused by the financing of the last war through bank credits, he advocates the selling of government bonds direct to the public.

The book reviews the methods of price control developed in the last war by the War Industries Board, the Food Administration and the Fuel Administration.

From the experience of these regulating bodies he draws the conclusion that control of prices in wartime is both necessary and feasible.

This little book can be recommended as a most thorough, yet very succinct, review of both the theory and the practice of control of wartime prices.